

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM  
Edition : 07.93  
replaces : 09.04.92  
Calibrating oil : ISO 4113  
  
Injection pump : VE4/12F1100R378-8  
Type number : 0 460 424 081

Customer-specific information  
Customer : CDC

Engine : 4 BT

Power kW: 67  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.0...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0,30...0,40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253,00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm: 840

Start of delivery  
Prestroke mm: 0,3  
(from BDC): +0,02(0,04)

Start of delivery block  
Piston stroke mm: 1,8  
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900  
Setting value mm: 2,3...2,7  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900  
Setting value bar: 4,1...4,7  
Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 900  
Del. quantity cm<sup>3</sup>/  
1000S.: 68,0...69.0

Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 4,0  
1000S.: (4,5)

Low-idle speed regulation

Speed 1/min: 475  
Del. quantity cm<sup>3</sup>/  
1000S.: 10,5...16,5

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 5,5  
1000S.: (7,0)

Full-load speed regulation

Speed 1/min: 1175  
Del. quantity cm<sup>3</sup>/  
1000S.: 32,5...37,5

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: -  
mind 1000S.: 65,0  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750  
TD travel mm: 1,3...2,1  
mm: (1,0...2,4)  
electromagnet Volt: 12  
2nd speed 1/min: 900

TD travel mm: 2,3...2,7  
mm: (1,8...3,2)  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1100  
TD travel mm: 3,4...4,1  
mm: (3,0...4,4)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump pressure bar: 2,3...2,9  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 900  
Supply-pump pressure bar: 4,1...4,7  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1100  
Supply-pump pressure bar: 4,9...5,5  
Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 41...83  
(26...98)  
2nd speed 1/min: 1100  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 55...138  
(40...154)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1230  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 0,0...3,0  
2nd speed 1/min: 1175  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 32,5...37,5  
(30,0...40,0)  
3rd speed 1/min: 1160  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 37,0...71,0  
4th speed 1/min: 1100  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/1000s.: 65,5...68,5  
(64,0...70,0)  
5th speed 1/min: 900

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 68,0...69,0  
(65,5...71,5)

6th speed 1/min: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 70,0...74,0  
(68,0...76,0)

7th speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 70,0...78,0  
(68,0...80,0)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1100  
Del. quantity cm<sup>3</sup>/1000s.: 0,0...3,0  
1000s.: -

Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 475  
Del. quantity cm<sup>3</sup>/1000s.: 0,0...3,0  
Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 475  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 10,5...16,5  
(8,5...18,5)

2nd speed 1/min: 550  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 0,0...3,0  
1000s.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 75,0...125,0  
1000s.: -

2nd speed 1/min: 240  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 40,0...80,0  
1000s.: -

Shutoff electromagnet:

Cut-in

min voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

|          |                 |
|----------|-----------------|
| K        | mm: -           |
| KF       | mm: 5,0...5,4   |
| MS       | mm: 1,1...1,5   |
| SVS max. | mm: 3,2         |
| Ya       | mm: 34.8...38.8 |
| Yb       | mm: 40.7...46.3 |

Remarks:

: C.D.C. # 391 9846

Overflow restriction 0.55 mm - Part No.  
..303

Ya = Distance between VE flange and  
speed-control lever in idle  
position

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
Lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM  
Edition : 07.93  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/12F1100R173-10  
Type number : 0 460 426 113  
Customer Part-No. :

Customer-specific information  
Customer : CASE

Engine : 6 BT-5.9 IND

TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.3  
(from BDC): +0.02(0.04)

Start of delivery block  
Piston stroke mm: 1.5  
mm: +0.02(0.06)

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750  
Setting value mm: 2.60...3.00  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure  
Speed 1/min: 750  
Setting value bar: 4.90...5.50  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750  
Del. quantity cm3/  
1000S.: 58.50...59.50  
Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 4.0  
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 400  
Del. quantity cm3/  
1000S.: 8.00...12.00  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 5.0  
1000S.: (5.5)

Full-load speed regulation

Speed 1/min: 1180  
Del. quantity cm3/  
1000S.: 15.00...55.00  
Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 35.00...85.00  
mind 1000S.: 35.00  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100  
TD travel mm: 4.80...5.60  
mm: (4.50...5.90)  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 750

TD travel mm: 2.60...3.00  
mm: (2.10...3.50)

Shutoff  
electromagnet Volt: 12

4th speed 1/min: 500

TD travel mm: 0.60...1.40  
mm: (0.30...1.70)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump pressure bar: 3.80...4.40

Shutoff  
electromagnet Volt: 12

2nd speed 1/min: 750

Supply-pump pressure bar: 4.90...5.50

Shutoff  
electromagnet Volt: 12

3rd speed 1/min: 1100

Supply-pump pressure bar: 6.40...7.00

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500

Shutoff  
electromagnet Volt: 12

Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
(26.70...98.40)

2nd speed 1/min: 1100

Shutoff  
electromagnet Volt: 12

Overflow quantity cm<sup>3</sup>/10s: 55.60...139.00  
(40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1210

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

3rd speed 1/min: 1180

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 15.00...55.00  
1000S.: (15.00...55.00)

5th speed 1/min: 1160

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 41.00...47.00  
1000S.: (38.00...50.00)

9th speed 1/min: 1100

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 56.00...59.00  
1000S.: (54.50...60.50)

10th speed 1/min: 900

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 57.00...60.00  
1000S.: (55.50...61.50)

12th speed 1/min: 750

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 58.50...59.50  
1000S.: (56.00...62.00)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1100

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 8.00...12.00  
1000S.: (5.00...15.00)

Dispersion cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

2nd speed 1/min: 450

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 0.00...4.00  
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 220

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 45.00...95.00  
1000S.: (45.00...95.00)

2nd speed 1/min: 420

Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 40.00...70.00  
1000S.: (40.00...70.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 35.00...85.00  
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

|          |                 |
|----------|-----------------|
| K        | mm: -           |
| KF       | mm: 5.2...5.6   |
| MS       | mm: 1.0...1.4   |
| SVS max. | mm: 4.5         |
| Ya       | mm: 34.8...38.8 |
| Yb       | mm: 40.2...45.8 |

Remarks:

: C.D.C. # 391 2113

Heavy-duty fuel-injection pump for  
DI-engines: only test using timing-  
device-travel measuring device with  
metal jacket

Ya = Distance between VE flange and  
speed-control lever in idle  
position

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM
Edition : 30.10.91
replaces : 20.10.89
Calibrating oil : ISO-4113
Injection pump : VE6/12F1150R373-1
Type number : 0 460 426 144
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6 BTA-5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): +0.02(0.04)

Start of delivery block
Piston stroke mm: 1.85
min: +0.02(0.06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 1.60...2.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
Charge press hPa: 1000
Setting value bar: 3.30...3.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 82.50...83.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 67.50...68.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 9.00...13.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1185
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 64.00...70.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...130.00
mind 1000S.: 70.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1150  
Charge press hPa: 1000  
TD travel mm: 2.80...3.60  
mm: (2.50...3.90)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 750  
Charge press hPa: 1000  
TD travel mm: 1.60...2.00  
mm: (1.10...2.50)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 600  
Charge press hPa: 1000  
TD travel mm: 0.50...1.30  
mm: (0.20...1.60)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 2.60...3.20  
Shutoff

electromagnet Volt: 12  
2nd speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3.30...3.90  
Shutoff

electromagnet Volt: 12  
3rd speed 1/min: 1150  
Charge press. hPa: 1000  
Supply-pump pressure bar: 4.90...5.50  
Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)  
2nd speed 1/min: 1150  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700\*  
Charge-air pressure-setting point hPa: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 77.50...78.50  
(73.50...82.50)

2nd speed 1/min: 1285  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 0.00...3.00  
(0.00...3.00)

3rd speed 1/min: 1215  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 15.00...55.00  
(15.00...55.00)

5th speed 1/min: 1185  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 64.00...70.00  
(61.00...73.00)

9th speed 1/min: 1150  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 76.00...79.00  
(74.50...80.50)

10th speed 1/min: 900  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 81.00...84.00  
(79.50...85.50)

12th speed 1/min: 750  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 82.50...83.50  
(80.00...86.00)

18th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 67.50...68.50  
(63.50...72.50)

Mech. shutoff:  
Mech. Abst.:

1st speed 1/min: 1150  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000s.: 0.00...3.00  
(0.00...3.00)



Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 9.00...13.00  
1000S.: (6.00...16.00)

Dispersion cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

2nd speed 1/min: 525  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 280  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 75.00...125.00  
1000S.: (75.00...125.00)

2nd speed 1/min: 440  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 50.00...80.00  
1000S.: (50.00...80.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 70.00...130.00  
1000S.: (70.00...130.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -  
KF mm: 5.2...5.6  
MS mm: 1.2...1.6  
SVS max. mm: 2.7

A09

Ya mm: 34.8...38.8  
Yb mm: 42.7...48.3

Remarks:

: C.D.C. # 391 6894  
:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Ya = Distance between VE flange and speed-control lever in idle position

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM  
Edition : 07.93  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/12F1150R373-1  
Type number : 0 460 426 144  
Customer Part-No. : 391 9004

Customer-specific information  
Customer : CDC

Engine : 6 BTA-5.9 IND.

Power KW: 131  
Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.3  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: 1.85  
mm:  $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 750  
Charge press. hPa: 1000  
Setting value mm: 1.60...2.00  
Shutoff  
electromagnet Volt: 24

## Supply-pump pressure

Speed 1/min: 750  
Charge press hPa: 1000  
Setting value bar: 3.30...3.90  
Shutoff  
electromagnet Volt: 24

## Full-load del. with charge press.:

Speed 1/min: 750  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 82.50...83.50  
Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/  
1000S.: (4.5)

## Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000S.: 67.50...68.50  
Shutoff  
electromagnet Volt: 24

## Low-idle speed regulation

Speed 1/min: 375  
Del. quantity cm<sup>3</sup>/  
1000S.: 9.00...13.00  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/  
1000S.: (7.0)

## Full-load speed regulation

Speed 1/min: 1200  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 64.00...70.00  
Shutoff  
electromagnet Volt: 24

## Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/  
mind 1000S.: 70.00...130.00  
1000S.: 70.00

Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1150  
Charge press hPa: 1000  
TD travel mm: 2.80...3.60  
mm: (2.50...3.90)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 750  
Charge press hPa: 1000  
TD travel mm: 1.60...2.00  
mm: (1.10...2.50)

Shutoff  
electromagnet Volt: 24  
4th speed 1/min: 600  
Charge press hPa: 1000  
TD travel mm: 0.50...1.30  
mm: (0.20...1.60)

Shutoff  
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 2.60...3.20  
Shutoff

electromagnet Volt: 24  
2nd speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3.30...3.90  
Shutoff

electromagnet Volt: 24  
3rd speed 1/min: 1150  
Charge press. hPa: 1000  
Supply-pump pressure bar: 4.90...5.50  
Shutoff  
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
(26.70...98.40)  
2nd speed 1/min: 1150  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24

Overflow quantity cm<sup>3</sup>/10s: 55.60...139.00  
(40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700\*  
Charge-air pressure-setting point hPa: 400  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 77.50...78.50  
(73.50...82.50)

2nd speed 1/min: 1300  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 0.00...3.00  
(0.00...3.00)

3rd speed 1/min: 1230  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 15.00...55.00  
(15.00...55.00)

5th speed 1/min: 1200  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 64.00...70.00  
(61.00...73.00)

9th speed 1/min: 1150  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 76.00...79.00  
(74.50...80.50)

10th speed 1/min: 900  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 81.00...84.00  
(79.50...85.50)

12th speed 1/min: 750  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 82.50...83.50  
(80.00...86.00)

18th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/1000s.: 67.50...68.50  
(63.50...72.50)

Mech. shutoff:  
Mech. Abststellung:

1st speed 1/min: 1150

Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 375  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 9.00...13.00  
1000S.: (6.00...16.00)

Dispersion cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 280  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 75.00...125.00  
1000S.: (75.00...125.00)

2nd speed 1/min: 440  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 50.00...80.00  
1000S.: (50.00...80.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 70.00...130.00  
1000S.: (70.00...130.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation  
K mm: -

KF mm: 5.2...5.6  
MS mm: 1.2...1.6  
SVS max. mm: 2.7  
Ya mm: 34.8...38.8  
Yb mm: 42.7...48.3

Remarks:

:  
Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Ya = Distance between VE flange and speed-control lever in idle position

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM  
 Edition : 07.93  
 replaces : 03.05.90  
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1050R373-2  
 Type number : 0 460 426 145  
 Customer Part-No. :

Customer-specific information  
 Customer : CDC

Engine : 6BTA-5.9 I

Power KW: 124  
 Speed 1/min: 2100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 return temp. °C  
 with thermometer : 40.00...48.00  
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
 assembly : 1 688 901 027

Opening  
 Pressure bar: 250.00...253.00

Perforated-plate  
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
 x Wall thickness : 2.00  
 x Length mm: 840

Start of delivery  
 Prestroke mm: 0.3  
 (from BDC): ±0.02(0.04)

Start of delivery block  
 Piston stroke mm: 1.85  
 mm: ±0.02(0.06)

Outlet : D

Injection-pump setting values  
 Test specifications in parentheses

## Timing-device travel

Speed 1/min: 750  
 Charge press. hPa: 1000  
 Setting value mm: 1.50...1.90  
 Shutoff  
 electromagnet Volt: 24

## Supply-pump pressure

Speed 1/min: 750  
 Charge press hPa: 1000  
 Setting value bar: 2.90...3.50  
 Shutoff  
 electromagnet Volt: 24

## Full-load del. with charge press.:

Speed 1/min: 750  
 Charge press. hPa: 1000  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 94.50...95.50

Shutoff  
 electromagnet Volt: 24  
 Dispersion cm<sup>3</sup>/: 4.0  
 1000S.: (4.5)

## Full-load del. w/out charge press.:

Speed 1/min: 500  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 50.50...51.50

Shutoff  
 electromagnet Volt: 24  
 Dispersion cm<sup>3</sup>/: 9.0  
 1000S.: (9.0)

## Low-idle speed regulation

Speed 1/min: 375  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 8.00...12.00

Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 5.5  
 1000S.: (7.0)

## Full-load speed regulation

Speed 1/min: 1100  
 Charge press hPa: 1000  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 73.00...79.00

Shutoff  
 electromagnet Volt: 24

## Start:

Speed 1/min: 100

Del. quantity cm<sup>3</sup>/: 60.00...110.00  
mind 1000s.: 60.00  
Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050  
Charge press hPa: 1000  
TD travel mm: 2.50...3.30  
mm: (2.20...3.60)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 750  
Charge press hPa: 1000  
TD travel mm: 1.50...1.90  
mm: (1.00...2.40)

Shutoff  
electromagnet Volt: 24  
4th speed 1/min: 600  
Charge press hPa: 1000  
TD travel mm: 0.50...1.30  
mm: (0.20...1.60)

Shutoff  
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 1.80...2.40  
Shutoff

electromagnet Volt: 24  
2nd speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump pressure bar: 2.90...3.50  
Shutoff

electromagnet Volt: 24  
3rd speed 1/min: 1050  
Charge press. hPa: 1000  
Supply-pump pressure bar: 4.30...4.90  
Shutoff  
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)  
2nd speed 1/min: 1050  
Charge press. hPa: 1000

Shutoff  
electromagnet Volt: 24  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700\*  
Charge-air pressure-setting point hPa: 300  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 79.50...80.50  
1000s.: (75.50...84.50)

2nd speed 1/min: 1200  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000s.: (0.00...3.00)

3rd speed 1/min: 1130  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 15.00...55.00  
1000s.: (15.00...55.00)

5th speed 1/min: 1100  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 73.00...79.00  
1000s.: (70.00...82.00)

9th speed 1/min: 1050  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 83.50...86.50  
1000s.: (82.00...88.00)

10th speed 1/min: 900  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 87.50...90.50  
1000s.: (86.00...92.00)

12th speed 1/min: 750  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 94.50...95.50  
1000s.: (92.00...98.00)

18th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 50.50...51.50  
1000s.: (46.50...55.50)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1050  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 375  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 8.00...12.00  
1000S.: (5.00...15.00)

Dispersion cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...4.00  
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 250  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 45.00...95.00  
1000S.: (45.00...95.00)

2nd speed 1/min: 450  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 25.00...55.00  
1000S.: (25.00...55.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation  
K mm: -

A15

KF mm: 5.2...5.6  
MS mm: 1.4...1.8  
SVS max. mm: 0.8  
Ya mm: 34.8...38.8  
Yb mm: 44.5...50.1

Remarks: : C.D.C. # 391 7000

\* Correction at adjusting nut

Overflow restriction 0.55 mm - Part No. ..303

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Ya = Distance between VE flange and speed-control lever in idle position

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM  
Edition : 07.93  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/12F1400R377  
Type number : 0 460 426 148  
Customer Part-No. :

Customer-specific information  
Customer : CDC

Engine : 6 BTA- 5.9 IND.

Power KW: 141  
Speed 1/min: 2800

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.36  
(from BDC): ±0.02(0.04)

Start of delivery block  
Piston stroke mm: 2.4  
mm: ±0.02(0.06)

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value mm: 1.50...1.90  
Shutoff  
electromagnet Volt: 12

## Supply-pump pressure

Speed 1/min: 1100  
Charge press hPa: 1000  
Setting value bar: 6.30...6.90  
Shutoff  
electromagnet Volt: 12

## Full-load del. with charge press.:

Speed 1/min: 850  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 80.50...81.50

Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 4.0  
1000S.: (4.5)

## Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000S.: 72.00...73.00

Shutoff  
electromagnet Volt: 12

## Low-idle speed regulation

Speed 1/min: 375  
Del. quantity cm<sup>3</sup>/  
1000S.: 8.00...14.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

## Full-load speed regulation

Speed 1/min: 1510  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 56.00...62.00

Shutoff  
electromagnet Volt: 12

## Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 100.00...150.00  
mind 1000S.: 100.0



Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1400  
Charge press hPa: 1000  
TD travel mm: 2.70...3.50  
mm: (2.40...3.80)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1100  
Charge press hPa: 1000  
TD travel mm: 1.50...1.90  
mm: (1.00...2.40)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 0.80...1.60  
mm: (0.50...1.90)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3.50...4.10

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6.30...6.90

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1400  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7.70...8.30

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 97.00...141.00  
(97.00...141.00)

2nd speed 1/min: 1400  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12

Overflow quantity cm<sup>3</sup>/10s: 115.00...184.00  
(115.00...184.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700\*  
Charge-air pressure-setting point hPa: 550  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 79.50...80.50  
(76.00...84.00)

2nd speed 1/min: 1650  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 0.00...3.00  
(0.00...3.00)

4th speed 1/min: 1550  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 15.00...55.00  
(15.00...55.00)

5th speed 1/min: 1510  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 56.00...62.00  
(53.00...65.00)

9th speed 1/min: 1400  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 75.50...78.50  
(74.00...80.00)

10th speed 1/min: 1100  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 80.00...83.00  
(78.00...85.00)

12th speed 1/min: 850  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 80.50...81.50  
(77.00...84.00)

18th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000s.: 73.00...74.00  
(69.50...77.50)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1400

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)

Shutoff  
 electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)

Shutoff  
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 375  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 8.00...14.00  
 1000S.: (6.00...16.00)

Dispersion cm<sup>3</sup>/: 5.5  
 1000S.: (7.0)

2nd speed 1/min: 450  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...4.00  
 1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 240  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 90.00...140.00  
 1000S.: (90.00...140.00)

2nd speed 1/min: 370  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 60.00...100.00  
 1000S.: (60.00...100.00)

4th speed 1/min: 101  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 100.00...150.00  
 1000S.: (100.00...150.00)

Shutoff electromagnet:

Cut-in  
 min voltage : 10.0  
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
 K mm: -  
 KF mm: -  
 MS mm: 1.0...1.4

SVS max. mm: 3.9  
 Ya mm: 34.8...38.8  
 Yb mm: 44.8...50.2

Remarks: : C.D.C. # 391 6908

Heavy-duty fuel-injection pump for  
 DI-engines: only test using timing-  
 device-travel measuring device with  
 metal jacket

\* Correction at adjusting nut

Ya = Distance between VE flange and  
 speed-control lever in idle  
 position

Yb = Distance between VE flange and  
 speed-control lever in rated speed  
 position

Measurement point = edge of control  
 lever on distributor-head end

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM  
Edition : 07.93  
replaces : 08.07.92  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/12F1100R371-1  
Type number : 0 460 426 158  
Customer Part-No. :

Customer-specific information  
Customer : CASE

Engine : 6 T 590

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.2  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: 1.5  
mm:  $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750  
Setting value mm: 3.10...3.50  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750  
Setting value bar: 4.90...5.50  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750  
Del. quantity cm<sup>3</sup>/  
1000S.: 59.00...60.00

Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 4.0  
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 450  
Del. quantity cm<sup>3</sup>/  
1000S.: 9.00...13.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1160  
Del. quantity cm<sup>3</sup>/  
1000S.: 37.00...43.00

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 65.00...105.00  
mind 1000S.: 65.00

Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100  
TD travel mm: 5.40...6.20  
mm: (5.10...6.50)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 750

TD travel mm: 3.10...3.50  
 mm: (2.60...4.00)  
 Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 500  
 TD travel mm: 1.00...1.80  
 mm: (0.70...2.10)  
 Shutoff  
 electromagnet Volt: 12  
 Supply-pump pressure characteristic:  
 1st speed 1/min: 500  
 Supply-pump pressure bar: 3.80...4.40  
 Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 750  
 Supply-pump pressure bar: 4.90...5.50  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1100  
 Supply-pump pressure bar: 6.40...7.00  
 Shutoff  
 electromagnet Volt: 12  
 Overflow quantity at overflow valve:  
 1st speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 12  
 Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
 2nd speed 1/min: 1100  
 Shutoff  
 electromagnet Volt: 12  
 Overflow quantity cm<sup>3</sup>/10s: 55.60...139.00  
 Delivery-quant. and breakaway char.:  
 2nd speed 1/min: 1230  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 3rd speed 1/min: 1180  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 13.00...33.00  
 1000S.: (13.00...33.00)  
 5th speed 1/min: 1160  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 37.00...43.00  
 1000S.: (34.00...46.00)  
 9th speed 1/min: 1100

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 57.00...60.00  
 1000S.: (55.50...61.50)  
 12th speed 1/min: 750  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 59.00...60.00  
 1000S.: (56.50...62.50)  
 20th speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 42.00...50.00  
 1000S.: (40.00...52.00)  
 Mech. shutoff:  
 Electr. shutoff:  
 1st speed 1/min: 425  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 Idle delivery:  
 1st speed 1/min: 450  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 9.00...13.00  
 1000S.: (6.00...16.00)  
 Dispersion cm<sup>3</sup>/: 5.5  
 1000S.: (7.0)  
 2nd speed 1/min: 550  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...4.00  
 1000S.: (0.00...4.00)  
 Automatic starting fuel delivery:  
 1st speed 1/min: 180  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 65.00...125.00  
 1000S.: (65.00...125.00)  
 2nd speed 1/min: 350  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 17.50...57.50  
 1000S.: (17.50...57.50)  
 4th speed 1/min: 100  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 65.00...105.00  
 1000S.: (65.00...105.00)  
 Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

|          |                 |
|----------|-----------------|
| K        | mm: -           |
| KF       | mm: 5.0...5.4   |
| MS       | mm: 0.8...1.2   |
| SVS max. | mm: 4.1         |
| XK       | mm: 18.8...20.8 |
| XL       | mm: 10.2...13.6 |
| Ya       | mm: 34.8...38.8 |
| Yb       | mm: 39.7...45.1 |

Remarks:

: C.D.C. # 391 8207

Overflow restriction 0.55 mm - Part No.  
..303

Heavy-duty fuel-injection pump for  
DI-engines: only test using timing-  
device-travel measuring device with  
metal jacket

Ya = Distance between VE flange and  
speed-control lever in idle  
position

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM  
 Edition : 07.93  
 replaces : 06.05.92  
 Calibrating oil : ISO-4113  
 Injection pump : VE6/12F1100R371-2  
 Type number : 0 460 426 201  
 Customer Part-No. :

Customer-specific information  
 Customer : CUM

Engine : 6 T 590

TEST BENCH REQUIREMENTS

Calibrating-oil  
 return temp. °C  
 with thermometer : 40.00...48.00  
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
 assembly : 1 688 901 027

Opening  
 Pressure bar: 250.00...253.00

Perforated-plate  
 diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
 x Wall thickness : 2.00  
 x Length mm: 840

Start of delivery  
 Prestroke mm: 0.2  
 (from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
 Piston stroke mm: 1.5  
 mm:  $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values  
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 700  
 Setting value mm: 1.30...1.70  
 Shutoff  
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 700  
 Setting value bar: 4.70...5.30  
 Shutoff  
 electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 700  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 73.00...74.00

Shutoff  
 electromagnet Volt: 12  
 Dispersion cm<sup>3</sup>/: 4.0  
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 450  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 8.00...12.00

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 5.5  
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1160  
 Del. quantity cm<sup>3</sup>/  
 1000S.: 45.00...51.00

Shutoff  
 electromagnet Volt: 12

Start:

Speed 1/min: 100  
 Del. quantity cm<sup>3</sup>/: 80.00...120.00  
 mind 1000S.: 80.00

Shutoff  
 electromagnet Volt: 12

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100  
 TD travel mm: 3.90...4.70  
 mm: (3.60...5.00)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 700

TD travel mm: 1.30...1.70  
 mm: (0.80...2.20)  
 Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 500  
 TD travel mm: 0.00...0.70  
 mm: (0.00...1.00)  
 Shutoff  
 electromagnet Volt: 12  
 Supply-pump pressure characteristic:  
 1st speed 1/min: 500  
 Supply-pump pressure bar: 3.80...4.40  
 Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 700  
 Supply-pump pressure bar: 4.70...5.30  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1100  
 Supply-pump pressure bar: 6.50...7.10  
 Shutoff  
 electromagnet Volt: 12  
 Overflow quantity at overflow valve:  
 1st speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 12  
 Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
 (26.70...98.40)  
 2nd speed 1/min: 1100  
 Shutoff  
 electromagnet Volt: 12  
 Overflow quantity cm<sup>3</sup>/10s: 55.60...139.00  
 (40.60...153.00)  
 Delivery-quant. and breakaway char.:  
 2nd speed 1/min: 1230  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/1000S.: 0.00...3.00  
 (0.00...3.00)  
 3rd speed 1/min: 1190  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/1000S.: 10.00...30.00  
 (10.00...30.00)  
 Shutoff  
 electromagnet Volt: 12  
 5th speed 1/min: 1160  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/1000S.: 45.00...51.00  
 (42.00...54.00)  
 9th speed 1/min: 1100  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/1000S.: 65.50...68.50  
 (64.00...70.00)  
 12th speed 1/min: 700  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/1000S.: 73.00...74.00  
 (70.50...76.50)  
 20th speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/1000S.: 68.00...76.00  
 (66.00...78.00)  
 Mech. shutoff:  
 Electr. shutoff:  
 1st speed 1/min: 450  
 Del. quantity cm<sup>3</sup>/1000S.: 0.00...3.00  
 (0.00...3.00)  
 Shutoff  
 electromagnet volt: -  
 Idle delivery:  
 1st speed 1/min: 450  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/1000S.: 8.00...12.00  
 (5.00...15.00)  
 Dispersion cm<sup>3</sup>/1000S.: 5.5  
 (7.0)  
 2nd speed 1/min: 550  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/1000S.: 0.00...3.00  
 (0.00...3.00)  
 Automatic starting fuel delivery:  
 1st speed 1/min: 180  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/1000S.: 80.00...140.00  
 (80.00...140.00)  
 2nd speed 1/min: 350  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/1000S.: 40.00...80.00  
 (40.00...80.00)  
 4th speed 1/min: 100  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 80.00...120.00  
1000S.: (80.00...120.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

|          |                 |
|----------|-----------------|
| K        | mm: -           |
| KF       | mm: 5.0...5.4   |
| MS       | mm: 0.8...1.2   |
| SVS max. | mm: 3.3         |
| Ya       | mm: 34.8...38.8 |
| Yb       | mm: 39.5...44.9 |

Remarks:

Ya = Distance between VE flange and  
:  
speed-control lever in idle

position

Yb = Distance between VE flange and  
speed-control lever in rated speed

position

Measurement point = edge of control  
lever on distributor-head end

Heavy-duty fuel-injection pump for  
DI-engines: only test using timing-  
device-travel measuring device with  
metal jacket



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN  
Edition : 07.93  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/12F1100R307-6  
Type number : 0 460 426 223  
Customer Part-No. :

Customer-specific information  
Customer : MAN

Engine : D 0826 TE 520

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 223

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 110

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.2  
(from BDC): +0.02(0.04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900  
Charge press. hPa: 1000  
Setting value mm: 1.90...2.30

Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900  
Charge press hPa: 1000  
Setting value bar: 6.60...7.20  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 93.50...94.50  
Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 4.0  
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm<sup>3</sup>/  
1000S.: 67.00...68.00  
Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 300  
Del. quantity cm<sup>3</sup>/  
1000S.: 6.50...13.50  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 6.0  
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1180  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 67.00...73.00  
Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 900  
Charge press hPa: 1000  
Inj.-qty. cm<sup>3</sup>/  
difference 1000S.: 13.00...21.00  
Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correctore anticipo iniezione (SV)

1.Speed 1/min: 900  
Charge press hPa: 1000  
TD-travel  
difference mm: 0.10...0.30  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100  
Charge press hPa: 1000  
TD travel mm: 2.60...3.40  
mm: (2.30...3.70)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 900  
Charge press hPa: 1000  
TD travel mm: 1.90...2.30  
mm: (1.40...2.80)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 750  
Charge press hPa: 1000  
TD travel mm: 0.70...1.50  
mm: (0.40...1.80)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 7.40...8.00

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 900  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 6.60...7.20

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 6.00...6.60

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)

2nd speed 1/min: 1000  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600\*  
Charge-air pressure-setting  
point hPa: 450  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 87.00...88.00  
1000s.: (85.00...90.00)

2nd speed 1/min: 1300  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000s.: (0.00...3.00)

3rd speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...40.00  
1000s.: (0.00...40.00)

4th speed 1/min: 1200  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 46.00...66.00  
1000s.: (46.00...66.00)

5th speed 1/min: 1180  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 67.00...73.00  
1000s.: (65.50...74.50)

9th speed 1/min: 1000  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 89.50...94.50  
1000s.: (88.00...96.00)

12th speed 1/min: 800  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 93.50...94.50  
1000s.: (91.50...96.50)

18th speed 1/min: 600  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 67.00...68.00  
1000s.: (65.00...70.00)

20th speed 1/min: 600

Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 95.50...104.50  
1000S.: (94.00...106.00)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 300  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 300  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 6.50...13.50  
1000S.: (4.50...15.50)

Dispersion cm<sup>3</sup>/: 6.0  
1000S.: (6.5)

2nd speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 900'  
Charge press. hPa: 1000  
Inj.-qty. cm<sup>3</sup>/ : 14.00...16.00  
difference 1000S.: (14.00...16.00)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 900#  
Charge press. hPa: 1000  
Inj.-qty. cm<sup>3</sup>/: 13.00...21.00  
difference 1000S.: (13.00...21.00)

Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 900\*  
Charge press. hPa: 1000  
Inj.-qty. cm<sup>3</sup>/: 2.00...8.00 Z  
difference 1000S.: (2.00...8.00) Z

Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 900#  
Charge press. hPa: 1000  
TD-travel : 0.10...0.30  
difference mm: (0.10...0.30)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 900\*  
Charge press. hPa: 1000  
TD-travel : 0.10...2.10 Z  
difference mm: (0.10...2.10) Z  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 900'  
Charge press. hPa: 1000  
Supply pump-  
pressure : 0.10...0.30  
difference bar: (0.10...0.30)  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 220  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 85.00...145.00  
1000S.: (85.00...145.00)

2nd speed 1/min: 450  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 80.00...110.00  
1000S.: (80.00...110.00)

3rd speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 74.00...76.00  
1000S.: (70.00...80.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: KOT  
MS mm: 0.8...1.2

SVS max. mm: 1.0  
Ya mm: 37.4...40.4  
Yb mm: 41.9...47.1

Remarks:

Operate control lever after each 3-7132 manifold-pressure compensator pressure change.

\* Correction at adjusting nut

Overflow restriction 0.55 mm - Part No. ..303

Z = Absolute delivery

Ya = Distance between VE flange and speed-control lever in idle position

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 07.93
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/8F2300R459
Type number : 0 460 484 049
Customer Part-No. :

Customer-specific information
Customer : RENAULT

Engine : F8Q - 732 A

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.10...4.50
AFB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 4.50...5.10
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Dispersion cm3/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 31.50...32.50

KSB/AFB 11
valve Volt: -
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 1.00...5.00

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2450
Del. quantity cm3/
1000S.: 25.50...31.50

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...70.00
mind 1000S.: 40.00

KSB/AFB
Valve Volt: -
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250

Inj.-qty. cm<sup>3</sup>/  
 difference 1000S.: -9.00...-13.00#  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 TD-travel dif.measurement  
 correttore anticipo iniezione (SV)  
 1.Speed 1/min: 1250  
 TD-travel  
 difference mm: -0.3...-0.50#  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2000  
 TD travel mm: 7.60...8.40  
 mm: (7.30...8.70)

KSB/AFB  
 valve Volt: -  
 Shutoff : -  
 electromagnet Volt: 12  
 3rd speed 1/min: 1250  
 TD travel mm: 4.10...4.50  
 mm: (3.60...5.00)

KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 750  
 TD travel mm: 1.70...2.50  
 mm: (1.40...2.80)

KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 8th speed 1/min: 500B  
 TD travel mm: 1.90...4.30  
 mm: (1.90...4.30)

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 9th speed 1/min: 310A  
 TD travel mm: 0.60...3.00  
 mm: (0.60...3.00)

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750

Supply-pump  
 pressure bar: 3.10...3.70  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1250  
 Supply-pump  
 pressure bar: 4.50...5.10  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 2000  
 Supply-pump  
 pressure bar: 6.50...7.10  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (26.70...98.40)  
 2nd speed 1/min: 2250  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2950  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>: 0.00...5.00  
 1000S.: (0.00...5.00)  
 3rd speed 1/min: 2650  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>: 10.50...18.50  
 1000S.: (9.50...19.50)  
 5th speed 1/min: 2450  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 25.50...31.50  
 1000S.: (24.50...32.50)  
 9th speed 1/min: 2250  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 33.00...35.00  
 1000S.: (31.70...36.30)  
 10th speed 1/min: 2000  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 32.50...34.50  
 1000S.: (31.20...35.80)  
 11th speed 1/min: 1625  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 30.10...33.10  
 1000S.: (29.30...33.90)  
 12th speed 1/min: 1250  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 31.50...32.50  
 1000S.: (29.70...34.70)  
 20th speed 1/min: 750  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 30.20...33.20  
 1000S.: (29.40...34.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 410  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet volt: -  
 KSB/AFB  
 valve Volt: -

Damper set qty.:

LFG-setting:  
 solidale con carcassa:  
 Idle delivery:

1st speed 1/min: 410  
 KSB/AFB  
 valve Volt: -  
 Shutoff

electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 7.50...11.50  
 1000S.: (5.50...13.50)

High Idle:

1st speed 1/mi: 500  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 7.00...11.00  
 1000S.: (5.00...13.00)

Residual:

1. Rotacao 1/min: 500  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 1.00...5.00  
 1000S.: (1.00...5.00)

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/ : -7.7...-9.70'  
 difference 1000S.: (-7.70...-9.70)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: -9.0...-13.0#  
 difference 1000S.: (-9.0...-13.00)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 5th speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: 2.00...8.00 +  
 difference 1000S.: (2.00...8.00)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12

TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):  
 1st speed 1/min: 1250  
 TD-travel : -0.3...-0.50#  
 difference mm: (-0.30...-0.50)  
 KSB/AFB  
 valve Volt: -  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1250

TD-travel : -0.2...-0.60+  
difference mm: (-0.10...-0.70)  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1250  
Supply pump-  
pressure : -0.1...-0.30'  
difference bar: (-0.10...-0.30)  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 40.00...70.00  
1000S.: (40.00...70.00)

2nd speed 1/min: 310  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 15.00...45.00  
1000S.: (15.00...45.00)

4th speed 1/min: 100  
KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 40.00...70.00  
1000S.: (40.00...70.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.3...3.5  
KF mm: 5.2...5.6  
MS mm: 1.3...1.7  
SVS max. mm: 1.8  
Ya mm: 27.0...31.0  
Yb mm: 60.2...69.8

Remarks:  
Permissible port/port scatter with  
stop test, electrical = max. 5.0  
ccm/1000 S.

A = KSB adjustment point  
B = KSB curve point

\* Unscrew KSB ball valve 2 mm

Ya = Distance between VE flange and  
speed-control lever in idle  
position

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
lever on distributor-head end



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE  
Edition : 07.93  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2500R305-2  
Type number : 0 460 620 009  
Customer Part-No. : 897 078 6390

Customer-specific information  
Customer : ISUZU

Engine : 4EC1-T

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1250  
Charge press. hPa: 700  
Setting value mm: 3.20...3.60  
Shutoff  
electromagnet Volt: 12

## Supply-pump pressure

Speed 1/min: 1250  
Charge press hPa: 700  
Setting value bar: 4.00...4.60

Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 700  
Del. quantity cm3/  
1000S.: 40.20...41.20

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 2.5  
1000S.: (2.5)

## Low-idle speed regulation

Speed 1/min: 425  
Del. quantity cm3/  
1000S.: 8.70...12.70

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 2.5  
1000S.: (3.0)

## Full-load speed regulation

Speed 1/min: 2750  
Charge press hPa: 700  
Del. quantity cm3/  
1000S.: 15.40...21.40

Shutoff  
electromagnet Volt: 12

## Start:

Speed 1/min: 100  
Del. quantity cm3/: 44.00...76.00  
mind 1000S.: 44.00

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Charge press hPa: 700  
Inj.-qty. cm3/  
difference 1000S.: 6.00...14.00

Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1250  
Charge press hPa: 700  
TD-travel  
difference mm: 0.90...1.10  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2250  
Charge press hPa: 700  
TD travel mm: 6.60...7.40  
mm: (6.30...7.70)

electromagnet Volt: 12  
3rd speed 1/min: 1250  
Charge press hPa: 700  
TD travel mm: 3.20...3.60  
mm: (2.70...4.10)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 800  
Charge press hPa: 700  
TD travel mm: 1.40...2.20  
mm: (1.10...2.50)

Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 2000  
Charge press. hPa: 700  
TD travel mm: 5.70...6.50  
mm: (5.40...6.80)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2250  
Charge press. hPa: 700  
Supply-pump pressure bar: 6.10...6.70

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 700  
Supply-pump pressure bar: 4.00...4.60

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 800  
Charge press. hPa: 700  
Supply-pump pressure bar: 2.90...3.50

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 75.06...119.54  
(75.06...119.54)  
2nd speed 1/min: 2500  
Charge press. hPa: 700

Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 116.76...161.24  
(116.76...161.24)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1000  
Charge-air pressure-setting point hPa: 340\*  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 37.50...38.50  
(35.50...40.50)

3rd speed 1/min: 2750  
Charge press. hPa: 700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 0.00...6.00  
(0.00...6.00)

5th speed 1/min: 2750  
Charge press. hPa: 700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 15.40...21.40  
(14.40...22.40)

8th speed 1/min: 2600  
Charge press. hPa: 700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 28.40...36.40  
(28.40...36.40)

9th speed 1/min: 2500  
Charge press. hPa: 700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 36.40...39.40  
(35.60...40.20)

10th speed 1/min: 2300  
Charge press. hPa: 700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 38.30...41.30  
(37.60...42.00)

11th speed 1/min: 2000  
Charge press. hPa: 700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 38.00...41.00  
(37.50...41.50)

12th speed 1/min: 1500  
Charge press. hPa: 700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/1000S.: 40.20...41.20  
(38.40...43.00)

13th speed 1/min: 1500  
Charge press. hPa: -

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 27.50...31.50  
1000S.: (27.00...32.00)  
15th speed 1/min: 1300  
Charge press. hPa: 700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 40.70...43.70  
1000S.: (40.20...44.20)  
20th speed 1/min: 600  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.60...34.60  
1000S.: (29.60...35.60)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)  
Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 8.70...12.70  
1000S.: (6.70...14.70)  
Dispersion cm<sup>3</sup>/: 2.5  
1000S.: (3.0)  
2nd speed 1/min: 550  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
Charge press. hPa: 700  
Inj.-qty. cm<sup>3</sup>/ : 6.00...14.00  
difference 1000S.: (6.00...14.00)  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1250  
Charge press. hPa: 700  
TD-travel : 0.90...1.10  
difference mm: (0.90...1.10)  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

2nd speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 42.50...57.50  
1000S.: (42.50...57.50)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 44.00...76.00  
1000S.: (44.00...76.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Operate control lever after each  
manifold-pressure compensator pressure  
change. : VL = 40.0°...50.0°

\* Correction at adjusting nut

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN  
 Edition : 23.09.93  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 400 845 043  
  
 Injection pump  
 Pump designation : PES5A95D410LS2543  
 EP type number : 0 410 895 978  
 Governor  
 Governor design. : RQV250...1100AB1038D  
 L  
 Governor no. : 0 420 214 237

Customer-spec. information  
 Customer : MAN

Engine : D 2565 M/MF

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
  
 Overflow valve : 1 417 413 000  
  
 Inlet press., bar : 1.00  
  
 Test nozzle holder  
 assembly : 0 681 343 009  
  
 Opening  
 pressure, bar : 172...175  
  
 Test lines : 1 680 750 003  
  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600  
  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
  
 Prestroke mm : 1.50...1.60  
 : (1.45...1.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1100  


---

 Rack travel in mm : 11.00...11.10  


---

 Del.quantity cm<sup>3</sup>/ : 11.0...11.2  
 100 s: (10.8...11.4)  


---

 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)  


---

 2nd speed rpm : 250.0  
 Rack travel in mm : 6.4...6.6  
 Del.quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s: (-)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1150  
 Rack travel in mm : 14.40...14.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 110.5...112.5  
 1000 : (108.5...114.5)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 38...46

Setting point:  
 Speed rpm : 1150  
 Rack travel in mm : 16.0

## Testing:

1st rack travel in: 10.00  
 Speed rpm : 1140...1150  
 2nd rack travel in: 4.00  
 Speed rpm : 1175...1205  
 4th rack travel in: 1300  
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 9...17

Testing:

Speed rpm : 100

Minimum rack trave: 7.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 315...375

Speed rpm : 450

Maximum rack trave: 1.00

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.00...11.10

2nd speed rpm : 800

Rack travel in m: 11.30...11.50

3rd speed rpm : 500

Rack travel in m: 11.40...11.50

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/ : 106.5...110.5

1000 s: (104.5...112.5)

Speed rpm : 500

Del.quantity cm3/ : 0.0...111.5

1000 s: (0.0...113.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 150.0...160.0

1000 s: (-)

Rack travel in mm : 16.00...16.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a69  
 Edition : 16.07.93  
 Replaces : 09.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 146

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190  
 -36R  
 Governor no. : 0 420 233 243

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 138.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 11.40...11.50  
 Del. quantity cm<sup>3</sup>/ : 10.7...10.9  
 100 s: (10.5...11.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.7...5.9  
 Del. quantity cm<sup>3</sup>/ : 1.4...1.8  
 100 s: (1.2...2.1)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del. quantity : 107.5...109.5  
 1000 : (105.5...111.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 48...56

Testing:

1st rack travel in: 10.40  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1225...1235  
3rd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.70...5.90

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 125.5...129.5  
1000 s: (123.5...131.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 14.5...18.5  
1000 s: (12.0...21.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915952

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM  
 Edition : 16.07.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 172  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1250AOC2190  
 -5SR  
 Governor no. : 0 420 233 286

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CTA 8.3  
 1st version kW : 131.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 101  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250  
 Rack travel in mm : 10.80...10.90  
 Del.quantity cm<sup>3</sup>/ : 9.9...10.1  
 100 s: (9.7...10.3)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.2...5.4  
 Del.quantity cm<sup>3</sup>/ : 1.2...1.6  
 100 s: (1.0...1.9)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del.quantity : 99.5...101.5  
 1000 : (97.5...103.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 51...59

Testing:



1st rack travel in: 9.80  
Speed rpm : 1325...1335  
2nd rack travel in: 4.00  
Speed rpm : 1400...1410  
3rd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1500  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.20...5.40

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1325...1335

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 145.0...165.0  
1000 s: (140.0...170.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 12.5...16.5  
1000 s: (10.0...19.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3920811

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM  
 Edition : 21.04.93  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 866 196

Injection pump  
 Pump designation : PES6A100D320/3RS2763  
 EP type number : 0 410 806 006  
 Governor  
 Governor design. : RSV375...1100AOC2190  
 -71R  
 Governor no. : 0 420 233 310

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 134.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 10.6...10.8

100 s: (10.4...11.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 2.1...2.5

100 s: (1.8...2.7)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 106.5...108.5

1000 : (104.5...110.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 9.90  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1230...1240  
3rd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 31...39  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 375  
Rack travel in mm : 5.90...6.10

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 750  
Rack travel in m: 11.90...12.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 119.5...123.5  
1000 s: (117.5...125.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 375  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 21.0...25.0  
1000 s: (18.5...27.5)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3921101

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 16.07.93  
Replaces : 06.93  
Test oil : ISO-4113

Combination no. : 0 400 866 208

Injection pump  
Pump designation : PES6A1000320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1100A0C2190  
-80R  
Governor no. : 0 420 233 319

Customer-spec. information  
Customer : C.D.C.

Engine : 6 CT 8.3

1st version kw : 156.6  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

---

Rack travel in mm : 12.30...12.40

---

Del.quantity cm<sup>3</sup>/ : 12.4...12.6

---

100 s: (12.2...12.8)

---

Spread cm<sup>3</sup> : 0.4

---

100 s: (0.6)

2nd speed rpm : 425.0  
Rack travel in mm : 5.6...5.8  
Del.quantity cm<sup>3</sup>/ : 1.5...1.9  
100 s: (1.2...2.1)  
Spread cm<sup>3</sup> : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del.quantity : 124.5...126.5  
1000 : (122.5...128.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 40...48

Testing:

1st rack travel in: 11.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1195...1205  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.60...5.80

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (125.0...155.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.5...21.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3921140

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE  
 Edition : 16.07.93  
 Replaces : 02.93  
 Test oil : ISO-4113

Combination no. : 0 400 876 412

Injection pump  
 Pump designation : PES6A1000410RS2762-1  
 EP type number : 0 410 806 008  
 Governor  
 Governor design. : RSV450...1100AOC2252  
 -3L

Governer no. : 0 420 232 592

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076TDW 30

1st version kw : 120.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.2...5.4

Del.quantity cm<sup>3</sup>/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 9.90  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
3rd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.20...5.40

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 500  
Rack travel in m: 12.30...12.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 136.5...140.5  
1000 s: (134.5...142.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.20...5.40  
Del. quantity cm<sup>3</sup>/ : 19.0...23.0  
1000 s: (16.5...25.5)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE54248  
Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL  
 Edition : 06.08.93  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 846 761

Injection pump  
 Pump designation : PE6P110A32ORS3108W  
 EP type number : 0 411 816 729  
 Governor  
 Governor design. : RQV250...1100PA649  
 Governor no. : 0 421 815 346

Customer-spec. information  
 Customer : VOLVO

Engine : THD100EE

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 17.1...17.3

100 s: (16.9...17.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.2...5.4

Del. quantity cm<sup>3</sup>/ : 3.0...3.4

100 s: (2.7...3.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.10...1.30

2nd speed rpm : 500  
 travel mm : 4.10...4.90

3rd speed rpm : 700  
 travel mm : 6.30...6.70

4th speed rpm : 950  
 travel mm : 6.30...6.70

5th speed rpm : 1100  
 travel mm : 7.00...7.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del. quantity : 171.0...173.0

1000 : (167.0...177.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED



1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1255...1285  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 250  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION  
Speed rpm : 250...425

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.80...12.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.60  
2nd pressure hPa : 275  
Rack travel in m: 9.60...9.80  
3rd pressure hPa : 760  
Rack travel in m: 12.50...12.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 105.5...108.5  
1000 s: (103.0...111.0)

#### BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...200.0  
1000 s: (166.0...204.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 30.0...34.0  
1000 s: (27.5...36.5)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

#### Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN  
 Edition : 25.08.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 035 030  
 Injection pump  
 Pump designation : PES5P120A720/3LS528  
 EP type number : 0 412 025 022  
 Governor  
 Governor design. : RQ325/1000PA813-22  
 Governor no. : 0 421 801 682

Customer spec. information  
 Customer : MAN

Engine : D2865 LUH 02  
 1st version kW : 198.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 019  
 Opening pressure, bar : 207...210  
 Orifice plate diameter mm : 0,8  
 Test lines : 1 680 750 075  
 Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 13.00...14.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 750  
 Rack travel in mm : 11.80...11.90  
 Del. quantity cm<sup>3</sup>/ : 21.9...22.1  
 100 s: (21.6...22.4)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 325.0  
 Rack travel in mm : 4.5...4.9  
 Del. quantity cm<sup>3</sup>/ : 2.0...2.6  
 100 s: (1.7...2.9)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 700  
 Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Aneroid pressure h: 1000  
 Del. quantity : 219.0...221.0  
 1000 : (216.0...224.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 700  
 Rack travel in mm : 15.5

Testing:  
 1st rack travel in: 10.85

Speed rpm : 1045...1061  
2nd rack travel in: 4.00  
Speed rpm : 1105...1135  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 4.7

#### Testing:

Speed rpm : 200  
Minimum rack travel: 6.50  
Speed rpm : 325  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.75...11.95  
2nd speed rpm : 550  
Rack travel in m: 11.75...11.955

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.75...11.85

#### Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 190  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 500  
Rack travel in m: 11.20...11.50

#### START CUT-OUT

Speed 1/min : 245 (265)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1000  
Del.quantity cm3/ : 219.0...225.0  
1000 s: (216.0...228.0)  
Aneroid pressure h: 1000

Speed rpm : 550  
Del.quantity cm3/ : 208.0...216.0  
1000 s: (205.0...219.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 118.0...120.0  
1000 s: (115.0...123.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 10.85  
Speed rpm : 1045...1061

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.30...4.70  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 3-726Q/2

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 5  
start of delivery

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : NAV  
 Edition : 16.08.93  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 046 846

Injection pump  
 Pump designation : PES6P100A320LS3309  
 EP type number : 0 412 006 704  
 Governor  
 Governor design. : RQV350...1300PA1042  
 -7K  
 Governor no. : 0 421 815 331

Customer-spec. information  
 Customer : NAVISTAR

Engine : DTA-408

1st version kW : 130,5  
 Rated speed : 2600

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 058

Inlet press., bar : 2.80

Overflow  
 quantity min. 1/h: 240...260

Test nozzle holder  
 assembly : 1 683 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 14.00...17.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 900

---

Rack travel in mm : 11.00...11.10

---

Del.quantity cm<sup>3</sup>/ : 10.0...10.2  
 100 s: (9.8...10.4)

---

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

---

2nd speed rpm : 350.0  
 Rack travel in mm : 5.1...5.3  
 Del.quantity cm<sup>3</sup>/ : 1.4...1.8  
 100 s: (1.2...2.1)

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.6)

**(B) Setting of injection pump  
 with governor**

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 350  
 travel mm : 1.60...2.00

2nd speed rpm : 500  
 travel mm : 3.80...4.20

3rd speed rpm : 800  
 travel mm : 5.80...6.20

4th speed rpm : 1300  
 travel mm : 8.90...9.10

5th speed rpm : 1500  
 travel mm : 10.40...10.80

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1

Speed rpm : 1500

Rack travel in mm : 7.00...13.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 900  
Aneroid pressure h: 1200  
Del.quantity : 100.0...102.0  
1000 : (98.0...104.0)  
Spread cm3 : 8.00  
1000 : (12.00)

RATED SPEED

1st version

Control lever  
position degrees: 116...124

Testing:

1st rack travel in: 10.70  
Speed rpm : 1360...1390  
2nd rack travel in: 4.00  
Speed rpm : 1500...1510  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 71...79

Testing:

Speed rpm : 275  
Minimum rack trave: 6.20  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 350...520

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 1300  
Rack travel in m: 11.70...11.90  
3rd speed rpm : 700  
Rack travel in m: 10.30...10.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1300  
Pressure hPa : 1200  
Rack travel mm : 11.70...11.90

Measurement

Speed 1/min : 1300

1st pressure hPa : -

Rack travel in m: 9.30...9.70  
2nd pressure hPa : 270  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 630  
Rack travel in m: 10.90...11.30

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1300  
Del.quantity cm3/ : 122.0...126.0  
1000 s: (120.0...128.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 900  
Del.quantity cm3/ : 75.5...79.5  
1000 s: (73.5...81.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1360...1390

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...160.0  
1000 s: (115.0...165.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30  
Del.quantity cm3/ : 14.5...18.5  
1000 s: (12.0...21.0)  
Spread cm3 : 4.00  
1000 s: (6.50)

Remarks:

: NAVISTAR #1819923C91

Bow dimension:

Sliding-sleeve position = 37.0 mm  
Delivery-valve spring pre-tension =  
6.30...6.40 mm.  
Permissible alteration from 6.00...6.70  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 10,1 d8  
 Edition : 27.10.93  
 Replaces : 24.08.89  
 Test oil : ISO-4113

Combination no. : 0 402 076 032

Injection pump  
 Pump designation : PES6P110A72ORS296  
 EP type number : 0 412 016 037  
 Governor  
 Governor design. : RSV400...1050PO/426D  
 R  
 Governor no. : 0 421 835 082

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6619 A

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 9 681 230 705

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,75...2,85  
 : (2,70...2,90)  
 Rack travel in mm : 9,00...12,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

---

Rack travel in mm : 12,20

---

Del. quantity cm<sup>3</sup>/ : 17,2...17,4

---

100 s : (-)

---

Spread cm<sup>3</sup> : 0,4

---

100 s : (-)

2nd speed rpm : 400  
 Rack travel in mm : 6,80  
 Del. quantity cm<sup>3</sup>/ : 1,9...2,5  
 100 s : (-)  
 Spread cm<sup>3</sup> : 0,4  
 100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,30...0,70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del. quantity : 172,0...174,0  
 1000 : (-)  
 Spread cm<sup>3</sup> : 4,0  
 1000 : (-)

RATED SPEED

1st version  
 Control lever  
 position degrees: 36...44

Testing:  
 1st rack travel in: 11,20  
 Speed rpm : 1095...1105  
 2nd rack travel in: 5,90  
 Speed rpm : 1135...1165

LOW IDLE 1

Control lever  
 position degrees: 15...23

Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6,30

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 400  
Rack travel in mm : 6,70...6,90  
Rack travel in mm : 2,00  
Speed rpm : 520...580

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 630  
Rack travel in m: 12,60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 273,2  
Rack travel mm : 9,65...9,75

#### Measurement

Speed 1/min : 500

1st pressure hPa : 526,5  
Rack travel in m: 11,30...1,90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 650  
Del.quantity cm3/ : 177,0...180,0  
1000 s: (-)  
Spread cm3 : 6,0  
1000 s: (-)  
Speed rpm : 550  
Del.quantity cm3/ : 84,0...92,0  
1000 s: (-)  
Spread cm3 : 6,0  
1000 s: (-)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11,20  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 170,0  
1000 s: (-)  
Rack travel in mm : 19,00...21,00

#### HIGH IDLE

#### 1st version

Speed rpm : 1150  
Rack travel in mm : 5,90  
Del.quantity cm3/ : 47,0...57,0  
1000 s: (-)  
Spread cm3 : 6,0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6,80  
Del.quantity cm3/ : 19,0...25,0  
1000 s: (-)  
Spread cm3 : 4,0  
1000 s: (-)

#### Remarks:

Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA  
 Edition : 16.08.93  
 Replaces : 01.93  
 Test oil : ISO-4113

Combination no. : 0 402 646 600

Injection pump  
 Pump designation : PE6P120A720RS7022  
 EP type number : 0 412 626 873  
 Governor  
 Governor design. : RQV200...1000PA539  
 -14  
 Governor no. : 0 421 814 011

Customer-spec. information  
 Customer : SCANIA

Engine : DS11 76

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 2.50

Test nozzle holder  
 assembly : 1 688 901 104

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.45...4.55  
 : (4.40...4.60)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 16.8...17.0

100 s: (16.5...17.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

2nd speed rpm : 250.0

Rack travel in mm : 4.6...5.0

Del.quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (1.2...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
 travel mm : 1.20...1.60

2nd speed rpm : 350  
 travel mm : 2.40...3.00

3rd speed rpm : 650  
 travel mm : 4.50...5.10

4th speed rpm : 1045  
 travel mm : 8.40...8.60

5th speed rpm : 1150  
 travel mm : 9.80...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del.quantity : 168.0...170.0

1000 : (165.0...173.0)



Spread cm<sup>3</sup> : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 112...120

Testing:  
1st rack travel in: 9.90  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1115...1145  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 63...71

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.20  
Speed rpm : 250  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 390...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 10.90...11.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.30  
2nd pressure hPa : 390  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 340  
Rack travel in m: 10.20...10.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 166.0...174.0  
1000 s: (164.0...176.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 142.0...146.0  
1000 s: (140.0...148.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 9.90...10.30

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.60...4.80

Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO  
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA  
 Edition : 16.08.93  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 646 603

Injection pump  
 Pump designation : PE6P120A720RS7022  
 EP type number : 0 412 626 873  
 Governor  
 Governor design. : RQV200...1000PA539  
 -15  
 Governor no. : 0 421 814 013

Customer-spec. information  
 Customer : SCANIA

Engine : DS11 75

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 2.50

Test nozzle holder assembly : 1 688 901 104

Opening pressure, bar : 250...253

Orifice plate diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.45...4.55  
 : (4.40...4.60)

Rack travel in mm : 9.00...12.00  
 Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

---

Rack travel in mm : 12.10...12.20

---

Del.quantity cm<sup>3</sup>/ : 20.8...21.0

---

100 s: (20.5...21.3)

---

Spread cm<sup>3</sup> : 0.8

---

100 s: (1.2)

2nd speed rpm : 250.0  
 Rack travel in mm : 4.6...5.0  
 Del.quantity cm<sup>3</sup>/ : 1.5...1.9  
 100 s: (1.2...2.2)

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
 travel mm : 1.20...1.60

2nd speed rpm : 350  
 travel mm : 2.40...3.00

3rd speed rpm : 650  
 travel mm : 4.50...5.10

4th speed rpm : 1045  
 travel mm : 8.40...8.60

5th speed rpm : 1150  
 travel mm : 9.80...10.20

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1050  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1500  
 Del.quantity : 208.0...210.0  
 1000 : (205.0...213.0)

Spread cm<sup>3</sup> : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 112...120

Testing:  
1st rack travel in: 11.10  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1125...1155  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 63...71

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.20  
Speed rpm : 250  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 370...430

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 12.10...12.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.30  
2nd pressure hPa : 590  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 390  
Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 194.0...202.0  
1000 s: (192.0...204.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 142.0...146.0  
1000 s: (140.0...148.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.10  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (136.0...184.0)  
Rack travel in mm : 9.90...10.30

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.60...4.80

#### Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO  
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA  
 Edition : 16.08.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 606  
 Injection pump  
 Pump designation : PE6P120A72ORS71880  
 EP type number : 0 412 626 846  
 Governor  
 Governor design. : RQV200...950PA725-10  
 Governor no. : 0 421 814 002

Customer-spec. information  
 Customer : SCANIA

Engine : DSC 11 32

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 2.50  
 Test nozzle holder  
 assembly : 1 688 901 104  
 Opening  
 pressure, bar : 250...253  
 Orifice plate  
 diameter mm : 0,7  
 Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 4.45...4.55  
 : (4.40...4.60)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  


---

 Rack travel in mm : 12.50...12.60  


---

 Del.quantity cm<sup>3</sup>/ : 21.3...21.5  


---

 100 s : (21.0...21.8)  


---

 Spread cm<sup>3</sup> : 0.8  


---

 100 s : (1.2)  


---

 2nd speed rpm : 250.0  
 Rack travel in mm : 4.6...5.0  
 Del.quantity cm<sup>3</sup>/ : 1.5...1.9  
 100 s : (1.1...2.3)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (0.8)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
 travel mm : 1.20...1.60  
 2nd speed rpm : 350  
 travel mm : 2.40...3.00  
 3rd speed rpm : 650  
 travel mm : 4.50...5.10  
 4th speed rpm : 1045  
 travel mm : 8.40...8.60  
 5th speed rpm : 1125  
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1150  
 Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1500  
 Del.quantity : 213.0...215.0  
 1000 : (210.0...218.0)

Spread cm<sup>3</sup> : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 110...118

Testing:  
1st rack travel in: 11.50  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 125  
Minimum rack travel: 6.20  
Speed rpm : 250  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 370...430

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 12.50...12.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.20...10.60  
2nd pressure hPa : 440  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 270  
Rack travel in m: 10.90...11.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 198.0...206.0  
1000 s: (196.0...208.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 151.0...155.0  
1000 s: (149.0...157.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 145.0...185.0  
1000 s: (141.0...189.0)  
Rack travel in mm : 10.20...10.60

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.60...4.80

Remarks:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO  
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 18.10.1993  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 783  
 Injection pump  
 Pump designation : PE6P120A320LS7858  
 EP type number : 0 412 626 875  
 Governor  
 Governor design. : RQV300...1050PA1065  
 -1  
 Governor no. : 0 421 814 068  
 Customer-spec. information  
 Customer : MERCEDES-BENZ  
 Engine : OM401 LA  
 1st version kW : 180.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 105  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 075  
 Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 11.10...11.20  
 Del. quantity cm<sup>3</sup>/ : 17.0...17.2  
 100 s: (16.7...17.5)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300  
 Rack travel in mm : 4.9...5.5  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.93...1.33  
 2nd speed rpm : 370  
 travel mm : 1.75...2.25  
 3rd speed rpm : 420  
 travel mm : 2.18...2.68  
 4th speed rpm : 750  
 travel mm : 4.62...5.12  
 5th speed rpm : 1107  
 travel mm : 9.65...9.95

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1170  
 Rack travel in mm : 8.80...12.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050

Aneroid pressure h: 700  
Del.quantity : 170.0...172.0  
1000 : (167.0...175.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 98...106

#### Testing:

1st rack travel in: 10.15  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 64...72

#### Testing:

Speed rpm : 200  
Minimum rack trave: 8.10  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30

#### CONSTANT REGULATION

Speed rpm : 350...450

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 400  
Pressure hPa : 200  
Rack travel mm : 10.25...10.35

#### Measurement

Speed 1/min : 400  
1st pressure hPa : 300  
Rack travel in m: 10.75...10.95  
2nd pressure hPa : -  
Rack travel in m: 9.90...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700

Speed rpm : 550  
Del.quantity cm3/ : 160.0...164.0  
1000 s: (157.0...167.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 200  
Speed rpm : 400  
Del.quantity cm3/ : 117.5...120.5  
1000 s: (114.5...123.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 130.0...132.0  
1000 s: (127.0...135.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.15  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (121.0...149.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 18.10.1993  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 786  
 Injection pump  
 Pump designation : PE6P120A320LS7846  
 EP type number : 0 412 626 865  
 Governor  
 Governor design. : RQV300...1050PA1065  
 Governor no. : 0 421 814 053

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del. quantity cm<sup>3</sup>/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.9...5.5

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.93...1.33

2nd speed rpm : 370

travel mm : 1.75...2.25

3rd speed rpm : 420

travel mm : 2.24...2.74

4th speed rpm : 750

travel mm : 4.62...5.12

5th speed rpm : 1108

travel mm : 9.71...9.91

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 10.40...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000



Del.quantity : 229.0...231.0  
1000 : (226.0...234.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 101...109

Testing:  
1st rack travel in: 11.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 65...73

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION  
Speed rpm : 300...400

TORQUE CONTROL  
Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 12.95...13.05  
2nd speed rpm : 1050  
Rack travel in m: 12.60...12.80  
3rd speed rpm : 850  
Rack travel in m: 12.90...13.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 700  
Pressure hPa : 1000  
Rack travel mm : 12.95...13.05

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 11.70...11.80  
2nd pressure hPa : 300  
Rack travel in m: 10.60...10.80  
3rd pressure hPa : -

Rack travel in m: 9.80...10.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 270.0...290.0  
1000 s: (266.0...294.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 18.10.1993  
 Replaces : 1.93  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 787  
 Injection pump  
 Pump designation : PE6P120A320LS7858  
 EP type number : 0 412 626 875  
 Governor  
 Governor design. : RQ300/1050PA1031-12  
 Governor no. : 0 421 801 681

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 17.0...17.2

100 s: (16.7...17.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.9...5.5

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 170.0...172.0

1000 : (167.0...175.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.15

Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1050  
Pressure hPa : 700  
Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 400  
1st pressure hPa : 200  
Rack travel in m: 10.25...10.35  
2nd pressure hPa : 300  
Rack travel in m: 10.75...10.95  
3rd pressure hPa : -  
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 160.0...164.0  
1000 s: (157.0...167.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 200  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 117.5...120.5  
1000 s: (114.5...123.5)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.15  
Speed rpm : 1090...1106

Remarks:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : MB  
 Edition : 18.10.93  
 Replaces : 1.93  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 788  
 Injection pump  
 Pump designation : PE6P120A320LS7858  
 EP type number : 0 412 626 875  
 Governor  
 Governor design. : RQ300/1050PA1031-11  
 Governor no. : 0 421 801 680

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 18.9...19.1

100 s: (18.6...19.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.9...5.5

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.30

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 189.0...191.0

1000 : (186.0...194.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

**RATED SPEED**

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.75

Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 1050  
Pressure hPa : 800  
Rack travel mm : 11.70...11.80

##### Measurement

Speed 1/min : 400

1st pressure hPa : 350  
Rack travel in m: 10.90...11.00  
2nd pressure hPa : 200  
Rack travel in m: 10.10...10.30  
3rd pressure hPa : -  
Rack travel in m: 9.60...9.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 800  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 182.0...186.0  
1000 s: (179.0...189.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 350  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 148.5...151.5  
1000 s: (145.5...154.5)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 126.0...128.0  
1000 s: (123.0...131.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.75  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : MB  
 Edition : 18.10.93  
 Replaces : 1.93  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 789  
 Injection pump  
 Pump designation : PE6P120A320LS7846  
 EP type number : 0 412 626 865  
 Governor  
 Governor design. : RQ300/1050PA1031-10  
 Governor no. : 0 421 801 679

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 1050

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300  
 Rack travel in mm : 5.4...6.0  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

**RATED SPEED**

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.35

Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 360...400

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1050  
Pressure hPa : 800  
Rack travel mm : 12.30...12.40

#### Measurement

Speed 1/min : 400

1st pressure hPa : 350  
Rack travel in m: 11.05...11.15  
2nd pressure hPa : 200  
Rack travel in m: 10.20...10.40  
3rd pressure hPa : -  
Rack travel in m: 9.70...10.00

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 800  
Speed rpm : 550  
Del.quantity cm3/ : 195.0...199.0  
1000 s: (192.0...202.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 350  
Speed rpm : 400  
Del.quantity cm3/ : 148.5...151.5  
1000 s: (145.5...154.5)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 126.0...128.0  
1000 s: (123.0...131.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.35  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 270.0...290.0  
1000 s: (266.0...294.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 18.10.93  
 Replaces : 12.92  
 Test oil : ISO-4113

Combination no. : 0 402 646 793

Injection pump  
 Pump designation : PE6P120A320LS7846  
 EP type number : 0 412 626 865  
 Governor  
 Governor design. : RQ300/1050PA1030-8  
 Governor no. : 0 421 801 673

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.4...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.35



Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1050  
Pressure hPa : 800  
Rack travel mm : 12.30...12.40

#### Measurement

Speed 1/min : 400

1st pressure hPa : 350  
Rack travel in m: 11.05...11.15  
2nd pressure hPa : 200  
Rack travel in m: 10.20...10.40  
3rd pressure hPa : -  
Rack travel in m: 9.70...10.00

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 800  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 195.0...199.0  
1000 s: (192.0...202.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 350  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 148.5...151.5  
1000 s: (145.5...154.5)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 126.0...128.0  
1000 s: (123.0...131.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.35  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 40.0...70.0  
1000 s: (36.0...74.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 18.10.1993  
 Replaces : 11.92  
 Test oil : ISO-4113

Combination no. : 0 402 646 794

Injection pump  
 Pump designation : PE6P120A320LS7858  
 EP type number : 0 412 626 875  
 Governor  
 Governor design. : RQV300...1050PA1033

Governer no. : 0 421 814 028

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 18.9...19.1

100 s: (18.6...19.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300  
 Rack travel in mm : 4.9...5.5  
 Del.quantity cm3/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm3 : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.50...1.00

2nd speed rpm : 575  
 travel mm : 4.30...4.80

3rd speed rpm : 625  
 travel mm : 4.80...5.30

4th speed rpm : 830  
 travel mm : 5.90...6.40

5th speed rpm : 1109  
 travel mm : 8.20...8.70

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1160  
 Rack travel in mm : 9.40...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050

Aneroid pressure h: 800  
Del.quantity : 189.0...191.0  
1000 : (186.0...194.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 10.75  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 77...85

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.10  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION  
Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1050  
Pressure hPa : 800  
Rack travel mm : 11.70...11.80

Measurement  
Speed 1/min : 400

1st pressure hPa : 350  
Rack travel in m: 10.90...11.00  
2nd pressure hPa : 200  
Rack travel in m: 10.10...10.30  
3rd pressure hPa : -  
Rack travel in m: 9.60...9.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 182.0...186.0  
1000 s: (179.0...189.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 350  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 148.5...151.5  
1000 s: (145.5...154.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 126.0...128.0  
1000 s: (123.0...131.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.75  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

Remarks:  
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 18.10.1993  
 Replaces : 11.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 795  
 Injection pump  
 Pump designation : PE6P120A320LS7858  
 EP type number : 0 412 626 875  
 Governor  
 Governor design. : RQV300...1050PA1033  
 -8  
 Governor no. : 0 421 814 027

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 17.0...17.2

100 s: (16.7...17.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300  
 Rack travel in mm : 4.9...5.5  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.52...0.92

2nd speed rpm : 575  
 travel mm : 4.27...4.77

3rd speed rpm : 625  
 travel mm : 4.72...5.22

4th speed rpm : 840  
 travel mm : 5.94...6.44

5th speed rpm : 1109  
 travel mm : 8.27...8.57

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 9.80...10.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700  
Del.quantity : 170.0...172.0  
1000 : (167.0...175.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 10.15  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 79...87

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.10  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30

#### CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1050  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 400

1st pressure hPa : 300  
Rack travel in m: 10.75...10.95  
2nd pressure hPa : 200  
Rack travel in m: 10.25...10.35  
3rd pressure hPa : -  
Rack travel in m: 9.90...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 550  
Del.quantity cm3/ : 160.0...164.0  
1000 s: (157.0...167.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: 200  
Speed rpm : 400  
Del.quantity cm3/ : 117.5...120.5  
1000 s: (114.5...123.5)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 130.0...132.0  
1000 s: (127.0...135.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 10.15  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (121.0...149.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 3.8.1993  
 Replaces : 10.92  
 Test oil : ISO-4113

Combination no. : 0 402 646 796

Injection pump  
 Pump designation : PE6P120A320LS7858  
 EP type number : 0 412 626 875  
 Governor  
 Governor design. : RQ300/1050PA1030-5  
 Governor no. : 0 421 801 665

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 18.9...19.1

100 s: (18.6...19.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.1...5.3

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 189.0...191.0

1000 : (186.0...194.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.70

Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.60...9.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 0.40...0.50  
2nd pressure hPa : 350  
Rack travel in m: 1.10...1.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 800  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 182.0...186.0  
1000 s: (179.0...189.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 126.0...128.0  
1000 s: (123.0...131.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 45.0...65.0  
1000 s: (41.0...69.0)  
Rack travel in mm : 9.60...10.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 18.10.1993  
 Replaces : 11.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 797  
 Injection pump  
 Pump designation : PE6P120A320LS7858  
 EP type number : 0 412 626 875  
 Governor  
 Governor design. : RQ300/1050PA1030-4  
 Governor no. : 0 421 801 664

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 17.0...17.2

100 s: (16.7...17.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.9...5.5

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del. quantity : 170.0...172.0

1000 : (167.0...175.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.15



Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1050  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 400

1st pressure hPa : 200  
Rack travel in m: 10.25...10.35  
2nd pressure hPa : 300  
Rack travel in m: 10.75...10.95  
3rd pressure hPa : -  
Rack travel in m: 9.90...10.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 160.0...164.0  
1000 s: (157.0...167.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 200  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 117.5...120.5  
1000 s: (114.5...123.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.15  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 40.0...70.0  
1000 s: (36.0...74.0)  
Rack travel in mm : 9.90...10.30

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 18.10.93  
 Replaces : 11.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 799  
 Injection pump  
 Pump designation : PE6P120A320LS7852  
 EP type number : 0 412 626 871  
 Governor  
 Governor design. : RQ300/950PA1031-5  
 Governor no. : 0 421 801 657

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kw : 250.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 105

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 23.4...23.6

100 s : (23.1...23.9)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s : (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s : (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1200

Del. quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.05

Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.10  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1200  
Rack travel mm : 14.00...14.10

#### Measurement

Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 13.10...13.20  
2nd pressure hPa : 250  
Rack travel in m: 11.00...11.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 228.0...232.0  
1000 s: (225.0...235.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

C28

1mm rack travel less than  
full load rack tr: 13.05  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 50.0...80.0  
1000 s: (46.0...84.0)  
Rack travel in mm : 10.10...10.50

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 18.10.93  
 Replaces : 8.92  
 Test oil : ISO-4113

Combination no. : 0 402 646 917X

Injection pump  
 Pump designation : PE6P120A320LS7834-10  
 EP type number : 0 412 626 853  
 Governor  
 Governor design. : RQ300/950PA971  
 Governor no. : 0 421 801 543

Cust. part no. : 0180740402

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kw : 230.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

D01

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550  


---

 Rack travel in mm : 15.25...15.35  


---

 Del.quantity cm3/ : 24.0...24.2  


---

 100 s: (23.7...24.5)  


---

 Spread cm3 : 0.5  


---

 100 s: (0.9)  


---

2nd speed rpm : 300.0  
 Rack travel in mm : 6.3...6.9  
 Del.quantity cm3/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm3 : 0.6  
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 550  
 Aneroid pressure h: 1200  
 Del.quantity : 240.0...242.0  
 1000 : (237.0...245.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.00  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.6

Testing:

Speed rpm : 200  
Minimum rack trave: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.50...6.70  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 14.90...15.10  
2nd speed rpm : 800  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 550  
Rack travel in m: 15.25...15.35

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 550  
Pressure hPa : 1200  
Rack travel mm : 15.25...15.35

Measurement

Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 12.85...12.95  
2nd pressure hPa : 250  
Rack travel in m: 10.80...11.00  
3rd pressure hPa : -  
Rack travel in m: 10.10...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 235.5...239.5  
1000 s: (232.5...242.5)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 14.00  
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 40.0...70.0  
1000 s: (36.0...76.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 18.10.93  
 Replaces : 11.92  
 Test oil : ISO-4113

Combination no. : 0 402 646 921X

Injection pump  
 Pump designation : PE6P120A320LS7837-10  
 EP type number : 0 412 626 855  
 Governor  
 Governor design. : RQ300/1050PA972-3  
 Governor no. : 0 421 801 565

Cust. part no. : 0200741202

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

D03

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

---

Rack travel in mm : 15.00...15.10

---

Del.quantity cm<sup>3</sup>/ : 24.4...24.6  
 100 s: (24.1...24.9)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

---

2nd speed rpm : 300.0  
 Rack travel in mm : 5.6...6.2  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 1200  
 Del.quantity : 244.0...246.0  
 1000 : (241.0...249.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:  
1st rack travel in: 13.90  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 200  
Minimum rack trave: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 13.40...13.50  
2nd pressure hPa : 150  
Rack travel in m: 9.60...9.80  
3rd pressure hPa : -  
Rack travel in m: 8.90...9.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 234.0...238.0  
1000 s: (231.0...241.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.90  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 60.0...90.0  
1000 s: (56.0...94.0)  
Rack travel in mm : 8.90...9.30

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 18.10.93  
 Replaces : 11.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 924X  
 Injection pump  
 Pump designation : PE6P120A320LS7837-10  
 EP type number : 0 412 626 855  
 Governor  
 Governor design. : RQ300/950PA971-3  
 Governor no. : 0 421 801 557

Cust. part no. : 0200743202

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600  


---

 Rack travel in mm : 15.00...15.10  


---

 Del. quantity cm<sup>3</sup>/ : 24.4...24.6  
 100 s: (24.1...24.9)  


---

 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.6...6.2  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 1200  
 Del. quantity : 244.0...246.0  
 1000 : (241.0...249.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0



Testing:

1st rack travel in: 14.05  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 200  
Minimum rack trave: 8.20  
Speed rpm : 300  
Rack travel in mm : 5.70...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 400  
1st pressure hPa : 550  
Rack travel in m: 13.40...13.50  
2nd pressure hPa : 150  
Rack travel in m: 9.60...9.80  
3rd pressure hPa : -  
Rack travel in m: 8.90...9.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

D06

1mm rack travel less than  
full load rack tr: 14.05  
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 65.0...95.0  
1000 s: (61.0...99.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 22.10.93  
 Replaces : 11.92  
 Test oil : ISO-4113

Combination no. : 0 402 646 925X

Injection pump  
 Pump designation : PE6P120A320LS7837-10  
 EP type number : 0 412 626 855  
 Governor  
 Governor design. : RQV300...950PA797-20  
 Governor no. : 0 421 813 893

Cust. part no. : 0200743302

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

D07

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600  


---

 Rack travel in mm : 15.00...15.10  


---

 Del. quantity cm<sup>3</sup>/ : 24.4...24.6  
 100 s: (24.1...24.9)  


---

 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  


---

2nd speed rpm : 300.0  
 Rack travel in mm : 5.6...6.2  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.05...1.45  
 2nd speed rpm : 567  
 travel mm : 4.40...4.90  
 3rd speed rpm : 780  
 travel mm : 6.10...6.60  
 4th speed rpm : 1009  
 travel mm : 8.40...8.70  
 5th speed rpm : 1190  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1025  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 1200  
Del.quantity : 244.0...246.0  
1000 : (241.0...249.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 120...128

Testing:  
1st rack travel in: 14.05  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1085...1115  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 82...90

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION  
Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 13.40...13.50  
2nd pressure hPa : 150  
Rack travel in m: 9.60...9.80  
3rd pressure hPa : -  
Rack travel in m: 8.90...9.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 550  
Speed rpm : 400

Del.quantity cm<sup>3</sup>/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 14.05  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 250.0...270.0  
1000 s: (246.0...274.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 22.10.93  
 Replaces : 8.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 926X  
 Injection pump  
 Pump designation : PE6P120A320LS7834-10  
 EP type number : 0 412 626 853  
 Governor  
 Governor design. : RQV300...950PA797-19  
 Governor no. : 0 421 813 901

Cust. part no. : 0180740502

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

D09

Test pressure, bar: 25...27<sup>s</sup>

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550  
 Rack travel in mm : 15.25...15.35  
 Del. quantity cm<sup>3</sup>/ : 24.0...24.2  
 100 s : (23.7...24.5)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.3...6.9  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s : (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s : (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL  
 1st speed rpm : 300  
 travel mm : 1.05...1.45  
 2nd speed rpm : 617  
 travel mm : 5.00...5.50  
 3rd speed rpm : 780  
 travel mm : 6.10...6.60  
 4th speed rpm : 1009  
 travel mm : 8.40...8.70  
 5th speed rpm : 1092  
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION  
 Control-lever position  
 Degree: -1  
 Speed rpm : 1020  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550  
Aneroid pressure h: 1200  
Del.quantity : 240.0...242.0  
1000 : (237.0...245.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 118...126

#### Testing:

1st rack travel in: 14.00  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1200  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Control lever  
position degrees: 82...90

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.50...6.70

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 14.90...15.10  
2nd speed rpm : 800  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 550  
Rack travel in m: 15.25...15.35

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 550  
Pressure hPa : 1200  
Rack travel mm : 15.25...15.35

#### Measurement

Speed 1/min : 400  
1st pressure hPa : 550  
Rack travel in m: 12.85...12.95  
2nd pressure hPa : 250  
Rack travel in m: 10.80...11.00  
3rd pressure hPa : -  
Rack travel in m: 10.10...10.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 235.5...239.5  
1000 s: (232.5...242.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 14.00  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...230.0  
1000 s: (196.0...234.0)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB  
 Edition : 22.10.93  
 Replaces : 8.92  
 Test oil : ISO-4113

Combination no. : 0 402 646 929X

Injection pump  
 Pump designation : PE6P120A320LS7834-10  
 EP type number : 0 412 626 853  
 Governor  
 Governor design. : RQV300...1050PA797  
 -25

Governer no. : 0 421 813 924

Cust. part no. : 0200744102

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 550

Rack travel in mm : 15.25...15.35

Del. quantity cm<sup>3</sup>/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.3...6.9  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.05...1.45

2nd speed rpm : 608  
 travel mm : 4.80...5.30

3rd speed rpm : 820  
 travel mm : 5.90...6.40

4th speed rpm : 1108  
 travel mm : 8.40...8.70

5th speed rpm : 1183  
 travel mm : 9.80...10.30

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1130  
 Rack travel in mm : 12.60...15.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1200  
Del.quantity : 240.0...242.0  
1000 : (237.0...245.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 120...128

Testing:  
1st rack travel in: 14.00  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Control lever  
position degrees: 87...92

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.70  
Speed rpm : 300  
Rack travel in mm : 6.50...6.70

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 14.90...15.10  
2nd speed rpm : 800  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 550  
Rack travel in m: 15.25...15.35

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 550  
Pressure hPa : 1200  
Rack travel mm : 15.25...15.35

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 12.85...12.95  
2nd pressure hPa : 250  
Rack travel in m: 10.80...11.00  
3rd pressure hPa : -

Rack travel in m: 10.10...10.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 233.5...237.5  
1000 s: (232.5...242.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.00  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 200.0...230.0  
1000 s: (196.0...234.0)

Remarks:  
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 22.10.93  
 Replaces : 8.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 930X  
 Injection pump  
 Pump designation : PE6P120A320LS7834-10  
 EP type number : 0 412 626 853  
 Governor  
 Governor design. : RQ300/1050PA972-7  
 Governor no. : 0 421 801 583

Cust. part no. : 0200744002

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 550  
 Rack travel in mm : 15.25...15.35  
 Del.quantity cm<sup>3</sup>/ : 24.0...24.2  
 100 s: (23.7...24.5)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.3...6.9  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 550  
 Aneroid pressure h: 1200  
 Del.quantity : 240.0...242.0  
 1000 : (237.0...245.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0



Testing:  
1st rack travel in: 14.00  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.60

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.70  
Speed rpm : 300  
Rack travel in mm : 6.50...6.70  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL  
Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 14.90...15.10  
2nd speed rpm : 800  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 550  
Rack travel in m: 15.25...15.35

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 550  
Pressure hPa : 1200  
Rack travel mm : 15.25...15.35

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 12.85...12.95  
2nd pressure hPa : 250  
Rack travel in m: 10.80...11.00  
3rd pressure hPa : -  
Rack travel in m: 10.10...10.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 233.5...237.5  
1000 s: (232.5...242.5)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.00  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 40.0...70.0  
1000 s: (36.0...74.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 22.10.93  
 Replaces : 11.92  
 Test oil : ISO-4113

Combination no. : 0 402 646 931X

Injection pump  
 Pump designation : PE6P120A320LS7837-10  
 EP type number : 0 412 626 855  
 Governor  
 Governor design. : RQV300...1050PA797  
 -24

Governer no. : 0 421 813 911

Cust. part no. : 0200748302

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 24.4...24.6

100 s: (24.1...24.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.05...1.45

2nd speed rpm : 608  
 travel mm : 4.80...5.30

3rd speed rpm : 820  
 travel mm : 5.90...6.40

4th speed rpm : 1108  
 travel mm : 8.40...8.70

5th speed rpm : 1280  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 1200  
Del.quantity : 244.0...246.0  
1000 : (241.0...249.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 118...126

#### Testing:

1st rack travel in: 13.90  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 81...89

#### Testing:

Speed rpm : 200  
Minimum rack trave: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00

#### CONSTANT REGULATION

Speed rpm : 400...450

#### TORQUE CONTROL

Dimension a mm : 0.85  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 14.80...15.00  
2nd speed rpm : 600  
Rack travel in m: 14.00...14.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1200  
Rack travel mm : 14.00...14.10

#### Measurement

Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 13.40...13.50  
2nd pressure hPa : 150  
Rack travel in m: 9.60...9.80

3rd pressure hPa : -  
Rack travel in m: 8.90...9.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 234.0...238.0  
1000 s: (231.0...241.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.90  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...230.0  
1000 s: (196.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA  
 Edition : 16.08.93  
 Replaces : 10.92  
 Test oil : ISO-4113

Combination no. : 0 402 646 937

Injection pump  
 Pump designation : PE6P120A720RS71880  
 EP type number : 0 412 626 846  
 Governor  
 Governor design. : RQV200...950PA725-7  
 Governor no. : 0 421 813 803

Customer-spec. information  
 Customer : SCANIA

Engine : DSC11 21

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 2.50

Test nozzle holder assembly : 1 688 901 104

Opening pressure, bar : 250...253

Orifice plate diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

---

Rack travel in mm : 12.70...12.80

---

Del.quantity cm<sup>3</sup>/ : 21.9...22.1

---

100 s: (21.6...22.4)

---

Spread cm<sup>3</sup> : 0.8

---

100 s: (1.2)

---

2nd speed rpm : 225.0

Rack travel in mm : 4.6...5.2

Del.quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (1.2...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
 travel mm : 1.20...1.60

2nd speed rpm : 350  
 travel mm : 2.40...3.00

3rd speed rpm : 650  
 travel mm : 4.50...5.10

4th speed rpm : 1045  
 travel mm : 8.40...8.60

5th speed rpm : 1125  
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1150

Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1500  
 Del.quantity : 219.0...221.0  
 1000 : (216.0...224.0)

Spread cm<sup>3</sup> : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 108...116

Testing:  
1st rack travel in: 11.70  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1105...1135  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 58...66

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.20  
Speed rpm : 225  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 350...410

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 12.70...12.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.30...10.70  
2nd pressure hPa : 440  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 270  
Rack travel in m: 10.90...11.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 202.0...210.0  
1000 s: (200.0...212.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 151.0...155.0  
1000 s: (149.0...157.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...180.0  
1000 s: (146.0...184.0)  
Rack travel in mm : 10.30...10.70

#### LOW IDLE

Speed rpm : 225  
Rack travel in mm : 4.60...4.80

Remarks:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO  
diaphragm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 25.10.93  
Replaces : 11.92  
Test oil : ISO-4113

Combination no. : 0 402 646 942X

Injection pump  
Pump designation : PE6P120A320LS7837-10  
EP type number : 0 412 626 855  
Governor  
Governor design. : RQ300/105CPA993  
Governor no. : 0 421 801 581

Cust. part no. : 0200747102

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

---

Rack travel in mm : 15.00...15.10

---

Del. quantity cm<sup>3</sup>/ : 24.4...24.6  
100 s: (24.1...24.9)

---

Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

---

2nd speed rpm : 300.0  
Rack travel in mm : 5.6...6.2  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 1200  
Del. quantity : 244.0...246.0  
1000 : (241.0...249.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 13.90  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.90

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.10  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

#### Measurement

Speed 1/min : 400  
1st pressure hPa : 550  
Rack travel in m: 13.40...13.50  
2nd pressure hPa : 150  
Rack travel in m: 9.60...9.80  
3rd pressure hPa : -  
Rack travel in m: 8.90...9.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 234.0...238.0  
1000 s: (231.0...241.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.90  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 25.10.93  
 Replaces : 11.92  
 Test oil : ISO-4113

Combination no. : 0 402 646 950X

Injection pump  
 Pump designation : PE6P120A320LS7837-10  
 EP type number : 0 412 626 855  
 Governor  
 Governor design. : RQ300/950PA993-2  
 Governor no. : 0 421 801 590

Cust. part no. : 0210747902

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

---

Rack travel in mm : 15.00...15.10

---

Del.quantity cm3/ : 24.4...24.6

---

100 s: (24.1...24.9)

---

Spread cm3 : 0.5

---

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.6...6.2  
 Del.quantity cm3/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm3 : 0.6  
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 1200  
 Del.quantity : 244.0...246.0  
 1000 : (241.0...249.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0



Testing:  
1st rack travel in: 14.05  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.90

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.30  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 13.40...13.50  
2nd pressure hPa : 150  
Rack travel in m: 9.60...9.80  
3rd pressure hPa : -  
Rack travel in m: 8.90...9.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version

D22

1mm rack travel less than  
full load rack tr: 14.05  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 25.10.93  
 Replaces : 02.93  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 646 976  
  
 Injection pump  
 Pump designation : PE6P120A320LS7846  
 EP type number : 0 412 626 865  
 Governor  
 Governor design. : RQ300/1050PA1031  
 Governor no. : 0 421 801 642

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm<sup>3</sup>/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.10  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.60...12.80  
2nd speed rpm : 700  
Rack travel in m: 13.30...13.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 700  
Pressure hPa : 1000  
Rack travel mm : 12.95...13.05

Measurement

Speed 1/min : 400  
1st pressure hPa : 550  
Rack travel in m: 11.70...11.80  
2nd pressure hPa : 300  
Rack travel in m: 10.60...10.80  
3rd pressure hPa : -  
Rack travel in m: 9.80...10.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 1050

Del.quantity cm3/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 270.0...290.0  
1000 s: (266.0...294.0)

Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB  
 Edition : 25.10.93  
 Replaces : 21.08.92  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 646 977  
  
 Injection pump  
 Pump designation : PE6P120A320LS7846  
 EP type number : 0 412 626 865  
 Governor  
 Governor design. : RQ300/1050PA1030-1  
 Governor no. : 0 421 801 641

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kw : 230.0  
 Rated speed : 2100

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

### BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm<sup>3</sup>/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

### RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:  
1st rack travel in: 11.70  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

TORQUE CONTROL  
Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.60...12.80  
2nd speed rpm : 700  
Rack travel in m: 13.30...13.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 700  
Pressure hPa : 1000  
Rack travel mm : 13.05...13.15

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 11.70...11.80  
2nd pressure hPa : 300  
Rack travel in m: 120.6...10.80  
3rd pressure hPa : -  
Rack travel in m: 9.80...10.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1090...1106

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 10.80...11.00

Remarks:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB  
 Edition : 25.10.93  
 Replaces : 21.08.92  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 646 978  
  
 Injection pump  
 Pump designation : PE6P120A320LS7846  
 EP type number : 0 412 626 865  
 Governor  
 Governor design. : RQ300/950PA1031-1  
 Governor no. : 0 421 801 643

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kw : 230.0  
 Rated speed : 1900

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

### BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm<sup>3</sup>/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

### RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:  
1st rack travel in: 12.00  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:  
Speed rpm : 200  
Minimum rack trave: 9.00  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 390...430

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 700  
Pressure hPa : 1000  
Rack travel mm : 12.95...13.05

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 11.70...11.80  
2nd pressure hPa : 300  
Rack travel in m: 10.60...10.80  
3rd pressure hPa : -  
Rack travel in m: 9.80...10.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 950  
Del.quantity cm3/ : 226.0...230.0  
1000 s: (223.0...233.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 990...1006

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 25.10.93  
 Replaces : 21.08.92  
 Test oil : ISO-4113

Combination no. : 0 402 646 979

Injection pump  
 Pump designation : PE6P120A320LS7846  
 EP type number : 0 412 626 865  
 Governor  
 Governor design. : RQ300/950PA1032  
 Governor no. : 0 421 801 644

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow quantity min. 1/h: 100...120

Test nozzle holder assembly : 1 688 901 105

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

---

Rack travel in mm : 12.95...13.05

---

Del. quantity cm<sup>3</sup>/ : 22.9...23.1

---

100 s: (22.6...23.4)

---

Spread cm<sup>3</sup> : 0.5

---

100 s: (0.9)

---

2nd speed rpm : 300.0  
 Rack travel in mm : 4.9...5.5  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.9)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1000  
 Del. quantity : 229.0...231.0  
 1000 : (226.0...234.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0



Testing:  
1st rack travel in: 11.90  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 700  
Pressure hPa : 1000  
Rack travel mm : 13.05...13.15

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 11.70...11.80  
2nd pressure hPa : 300  
Rack travel in m: 10.60...10.80  
3rd pressure hPa : -  
Rack travel in m: 9.80...10.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 226.0...230.0  
1000 s: (223.0...233.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 10.10...10.40

Remarks:  
:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB  
 Edition : 25.10.93  
 Replaces : 21.08.92  
 Test oil : ISO-4113

Combination no. : 0 402 646 980

Injection pump  
 Pump designation : PE6P120A320LS7846  
 EP type number : 0 412 626 865  
 Governor  
 Governor design. : RQV300...950PA1033  
 Governor no. : 0 421 813 990

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
 Rated speed : 1900

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm<sup>3</sup>/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.10...1.50

2nd speed rpm : 567  
 travel mm : 4.40...5.00

3rd speed rpm : 780  
 travel mm : 6.00...6.60

4th speed rpm : 1010  
 travel mm : 8.50...8.70

5th speed rpm : 1190  
 travel mm : 11.00...12.00

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1066

Rack travel in mm : 10.60...13.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 1000  
Del.quantity : 229.0...231.0  
1000 : (226.0...234.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.00  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control Lever  
position degrees: 76...84

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION  
Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 700  
Pressure hPa : 1000  
Rack travel mm : 12.95...13.05

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 11.70...11.80  
2nd pressure hPa : 300  
Rack travel in m: 10.60...10.80  
3rd pressure hPa : -  
Rack travel in m: 9.80...10.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

EO4

1st version  
Aneroid pressure h: 1000  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 226.0...230.0  
1000 s: (223.0...233.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 990...1000

Remarks:  
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 25.10.93  
 Replaces : 21.08.92  
 Test oil : ISO-4113

Combination no. : 0 402 646 983

Injection pump  
 Pump designation : PE6P120A320LS7846  
 EP type number : 0 412 626 865  
 Governor  
 Governor design. : RQV300...1050PA1033  
 -2  
 Governor no. : 0 421 813 994

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm<sup>3</sup>/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del.quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.54...0.94

2nd speed rpm : 575  
 travel mm : 4.28...4.78

3rd speed rpm : 830  
 travel mm : 5.80...6.40

4th speed rpm : 1107  
 travel mm : 8.23...8.53

5th speed rpm : 1290  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1160

Rack travel in mm : 10.40...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 1000  
Del. quantity : 229.0...231.0  
1000 : (226.0...234.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 116...124

Testing:  
1st rack travel in: 11.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control Lever  
position degrees: 76...84

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION  
Speed rpm : 300...400

TORQUE CONTROL  
Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.60...12.80  
2nd speed rpm : 850  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 700  
Rack travel in m: 12.95...13.05

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 700  
Pressure hPa : 1000  
Rack travel mm : 12.95...13.05

Measurement  
Speed 1/min : 400

1st pressure hPa : 550

Rack travel in m: 11.70...11.80  
2nd pressure hPa : 300  
Rack travel in m: 10.60...10.80  
3rd pressure hPa : -  
Rack travel in m: 9.80...10.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1090...1100

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 27.11.92  
 Replaces : 10.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 993  
 Injection pump  
 Pump designation : PE6P120A320LS7852  
 EP type number : 0 412 626 871  
 Governor  
 Governor design. : RQ300/1050PA1030-3  
 Governor no. : 0 421 801 653

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del.quantity cm<sup>3</sup>/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1100

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

2nd version

Speed rpm : 600

Aneroid pressure h: 1100

Del.quantity cm<sup>3</sup>/ : 234.0...236.0

1000 s: (231.0...239.0)

Spread cm<sup>3</sup> : 5.00

1000 s: (9.00)

RATED SPEED

1st version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 12.90  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

2nd version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 12.90  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.30  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 1050  
Rack travel in m: 13.80...14.00  
3rd speed rpm : 800  
Rack travel in m: 14.40...14.60

Torque control curve - 2nd version

1st speed rpm : 1050  
Rack travel in m: 13.8...14.0  
2nd speed rpm : 800  
Rack travel in m: 14.4...14.6

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500

E08

Pressure hPa : -  
Rack travel mm : 10.00...10.30

Measurement  
Speed 1/min : 500

1st pressure hPa : 250  
Rack travel in m: 10.90...11.00  
2nd pressure hPa : 550  
Rack travel in m: 12.90...13.10

2th version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel in mm : 10.0...10.3

Measurement  
Speed rpm : 500

1st pressure hPa : 300  
Rack travel in m: 10.7...10.8  
2nd pressure hPa : 700  
Rack travel in m: 12.8...13.0

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100  
Speed rpm : 1050  
Del.quantity cm3/ : 223.0...227.0  
1000 s: (220.0...230.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 130.0...132.0  
1000 s: (127.0...135.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

2nd version

Aneroid pressure h: 1100  
Speed rpm : 1050  
Del.quantity cm3/ : 223.0...227.0  
1000 s: (220.0...230.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 130.0...132.0  
1000 s: (127.0...135.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90  
Speed rpm : 1095...1110

2nd version

1mm rack travel less than  
full load rack tr: 12.90  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 45.0...75.0  
1000 s: (41.0...79.0)  
Rack travel in mm : 10.00...10.40

Remarks:

Values of version 1 only apply to regu-  
lators with LDA spring 2 424 619 110.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 25.10.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 993  
 Injection pump  
 Pump designation : PE6P120A320LS7852-1  
 EP type number : 0 412 626 910  
 Governor  
 Governor design. : RQ300/1050PA1030-3  
 Governor no. : 0 421 801 653

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1100

Del. quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.90

Speed rpm : 1095...1111  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.30  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 370...410

#### TORQUE CONTROL

Dimension a mm : 0.20  
2nd speed rpm : 1050  
Rack travel in m: 13.80...14.00  
3rd speed rpm : 600  
Rack travel in m: 14.00...14.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1100  
Rack travel mm : 14.00...14.10

#### Measurement

Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 13.10...13.20  
2nd pressure hPa : 250  
Rack travel in m: 11.00...11.20  
3rd pressure hPa : -  
Rack travel in m: 9.90...10.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 223.0...227.0  
1000 s: (220.0...230.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 203.0...206.0  
1000 s: (200.0...209.0)

Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.90  
Speed rpm : 1095...1111

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 45.0...75.0  
1000 s: (41.0...79.0)  
Rack travel in mm : 10.00...10.40

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 25.10.93  
 Replaces : 10.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 994  
 Injection pump  
 Pump designation : PE6P120A320LS7852  
 EP type number : 0 412 626 871  
 Governor  
 Governor design. : RQ300/950PA1032-3  
 Governor no. : 0 421 801 654

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1100

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm3 : 5.00

1000 : (9.00)

2nd version

Speed rpm : 600

Aneroid pressure h: 1100

Del.quantity cm3/ : 234.0...236.0

1000 s: (231.0...239.0)

Spread cm3 : 5.00

1000 s: (9.00)

RATED SPEED

1st version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 13.00  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

#### 2nd version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 13.00  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.30  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 370...410

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1100  
Rack travel mm : 14.00...14.10

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 13.10...13.20  
2nd pressure hPa : 250  
Rack travel in m: 11.00...11.20  
3rd pressure hPa : -  
Rack travel in m: 9.90...10.10  
2th version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel in mm : 10.1...10.4

Measurement  
Speed rpm : 500

1st pressure hPa : 300  
Rack travel in m: 10.8...10.9  
2nd pressure hPa : 700  
Rack travel in m: 12.9...13.1

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1100  
Speed rpm : 950  
Del.quantity cm3/ : 228.0...232.0  
1000 s: (225.0...235.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

##### 2nd version

Aneroid pressure h: 1100  
Speed rpm : 950  
Del.quantity cm3/ : 228.0...232.0  
1000 s: (225.0...235.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 990...1006

##### 2nd version

1mm rack travel less than  
full load rack tr: 13.00

Speed rpm : 99.0...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 50.0...80.0

1000 s: (46.0...84.0)

Rack travel in mm : 10.10...10.50

Remarks:

:

Values of version 1 only apply to regulators with LDA spring 2 424 619 110.



## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB  
 Edition : 25.10.93  
 Replaces : 10.92  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 646 996  
  
 Injection pump  
 Pump designation : PE6P120A320LS7852  
 EP type number : 0 412 626 871  
 Governor  
 Governor design. : RQ300/1050PA1031-4  
 Governor no. : 0 421 801 656

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
 Rated speed : 2100

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

### BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1100

Del. quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

2nd version

Speed rpm : 600

Aneroid pressure h: 1100

Del. quantity cm<sup>3</sup>/ : 234.0...236.0

1000 s: (231.0...239.0)

Spread cm<sup>3</sup> : 5.00

1000 s: (9.00)

## RATED SPEED

### 1st version

#### Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

#### Testing:

1st rack travel in: 12.90  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

### 2nd version

#### Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

#### Testing:

1st rack travel in: 12.80  
Speed rpm : 1090...1105  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

### LOW IDLE 1

#### Setting point w/out bumper spring

Speed rpm : 300  
Rack travel in mm : 5.9

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.10  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

### TORQUE CONTROL

Dimension a mm : 0.20  
2nd speed rpm : 1050  
Rack travel in m: 13.80...14.00  
3rd speed rpm : 600  
Rack travel in m: 14.00...14.10

#### Torque control curve - 2nd version

1st speed rpm : 1050  
Rack travel in m: 13.8...14.0  
2nd speed rpm : 800  
Rack travel in m: 14.5...14.7

### Aneroid/Altitude Compensator Test

### 1st version

#### Setting

Speed rpm : 600  
Pressure hPa : 1100  
Rack travel mm : 14.00...14.10

#### Measurement

Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 13.10...13.20  
2nd pressure hPa : 250  
Rack travel in m: 11.00...11.20  
3rd pressure hPa : -  
Rack travel in m: 9.90...10.10

### 2th version

#### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel in mm : 10.0...10.3

#### Measurement

Speed rpm : 500

1st pressure hPa : 300  
Rack travel in m: 10.7...10.8  
2nd pressure hPa : 700  
Rack travel in m: 12.8...13.0  
3rd pressure hPa : 1000  
Rack travel in m: 14.0...14.1

### START CUT-OUT

Speed 1/min : 220 (240)

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1100  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 223.0...227.0  
1000 s: (220.0...230.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 203.0...206.0  
1000 s: (200.0...209.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

### 2nd version

Aneroid pressure h: 1100  
Speed rpm : 1050

Del.quantity cm3/ : 223.0...227.0  
1000 s: (220.0...230.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 130.0...132.0  
1000 s: (127.0...135.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.90  
Speed rpm : 1090...1106

2nd version  
1mm rack travel less than  
full load rack tr: 12.80  
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 255.0...275.0  
1000 s: (251.0...279.0)

Remarks:

Values of version 1 only apply to regulators with LDA spring 2 424 619 110.



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB  
 Edition : 26.10.93  
 Replaces : 10.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 997  
 Injection pump  
 Pump designation : PE6P120A320LS7852  
 EP type number : 0 412 626 871  
 Governor  
 Governor design. : RQV300...950PA1033-5  
 Governor no. : 0 421 814 008

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
 Rated speed : 1900

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.00...1.50

2nd speed rpm : 575  
 travel mm : 4.20...4.70

3rd speed rpm : 790  
 travel mm : 5.90...6.40

4th speed rpm : 1010  
 travel mm : 8.00...8.50

5th speed rpm : 1200  
 travel mm : 11.00...12.00

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1

Speed rpm : 1075  
 Rack travel in mm : 11.70...14.30

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 1100

Del.quantity : 234.0...236.0  
1000 : (231.0...239.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)  
2nd version  
Speed rpm : 600  
Aneroid pressure h: 1100  
Del.quantity cm<sup>3</sup>/ : 234.0...236.0  
1000 s: (231.0...239.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 13.00  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1200  
Speed rpm : 0.00...1.40

2nd version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 13.00  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1200  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 80...88

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.10  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 410...470

CONSTANT REGULATION  
Speed rpm : 290...360

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600

Pressure hPa : 1100  
Rack travel mm : 14.00...14.10

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 13.10...13.20  
2nd pressure hPa : 250  
Rack travel in m: 11.00...11.20  
3rd pressure hPa : -  
Rack travel in m: 9.90...10.20

2th version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel in mm : 10.1...10.4

Measurement  
Speed rpm : 500

1st pressure hPa : 300  
Rack travel in m: 10.8...10.9  
2nd pressure hPa : 700  
Rack travel in m: 12.9...13.1  
3rd pressure hPa : 1100  
Rack travel in m: 14.0...14.1

#### START CUT-OUT

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1100  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 228.0...232.0  
1000 s: (225.0...235.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 203.0...206.0  
1000 s: (200.0...209.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

2nd version  
Aneroid pressure h: 1100  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 228.0...232.0  
1000 s: (225.0...235.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.00...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 990...1000

2nd version  
1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 255.0...275.0  
1000 s: (251.0...279.0)

Remarks:

:

Values of version 1 only apply to regu-  
lators with LDA spring 2 424 619 110.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB  
 Edition : 26.10.93  
 Replaces : 10.92  
 Test oil : ISO-4113

Combination no. : 0 402 646 998

Injection pump  
 Pump designation : PE6P120A320LS7852  
 EP type number : 0 412 626 871  
 Governor  
 Governor design. : RQV300...1050PA1033  
 -6  
 Governor no. : 0 421 814 009

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kw : 250.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)

Rack travel in mm : 20.00...21.00  
 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 600

---

Rack travel in mm : 14.00...14.10

---

Del. quantity cm<sup>3</sup>/ : 23.4...23.6  
 100 s: (23.1...23.9)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

---

2nd speed rpm : 300.0  
 Rack travel in mm : 5.6...6.2  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

**(B) Setting of injection pump  
 with governor**

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 0.55...0.95

2nd speed rpm : 575  
 travel mm : 4.30...4.80

3rd speed rpm : 625  
 travel mm : 4.80...5.30

4th speed rpm : 830  
 travel mm : 5.90...6.40

5th speed rpm : 1190  
 travel mm : 9.90...10.20

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1

Speed rpm : 1170  
 Rack travel in mm : 11.70...14.30

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
Speed rpm : 600  
Aneroid pressure h: 1100  
Del. quantity : 234.0...236.0  
1000 : (231.0...239.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

2nd version  
Speed rpm : 600  
Aneroid pressure h: 1100  
Del. quantity cm<sup>3</sup>/ : 234.0...236.0  
1000 s: (231.0...239.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.90  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

2nd version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.90  
Speed rpm : 1090...1105  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 78...86

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.70  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION  
Speed rpm : 300...400

TORQUE CONTROL  
Dimension a mm : 0.15  
2nd speed rpm : 1050  
Rack travel in m: 13.80...14.00  
3rd speed rpm : 600

Rack travel in m: 14.00...14.10

Torque control curve - 2nd version  
1st speed rpm : 1050  
Rack travel in m: 13.8...14.0  
2nd speed rpm : 800  
Rack travel in m: 14.0...14.2

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1100  
Rack travel mm : 14.00...14.10

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 13.10...13.20  
2nd pressure hPa : 250  
Rack travel in m: 11.00...11.20  
3rd pressure hPa : -  
Rack travel in m: 9.90...10.20

2th version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel in mm : 10.0...10.3

Measurement  
Speed rpm : 500

1st pressure hPa : 300  
Rack travel in m: 10.7...10.8  
2nd pressure hPa : 700  
Rack travel in m: 12.8...13.0  
3rd pressure hPa : 1100  
Rack travel in m: 14.0...14.1

#### START CUT-OUT

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1100  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 223.0...227.0  
1000 s: (220.0...230.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400

Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

2nd version

Aneroid pressure h: 1100  
Speed rpm : 1050  
Del.quantity cm3/ : 223.0...227.0  
1000 s: (220.0...230.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 130.0...132.0  
1000 s: (127.0...135.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90  
Speed rpm : 1090...1100

2nd version

1mm rack travel less than  
full load rack tr: 12.90  
Speed rpm : 1090...1100

Remarks:

;  
Values of version 1 only apply to regu-  
lators with LDA spring 2 424 619 110.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 648 812

Injection pump  
 Pump designation : PERP120A320LS7801-10  
 EP type number : 0 412 628 851  
 Governor  
 Governor design. : RQ300/1050PA717  
 Governor no. : 0 421 801 258

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 2100

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

### BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del. quantity cm<sup>3</sup>/ : 22.2...22.4

100 s: (21.9...22.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.7

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.8)

### GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 680

Del. quantity : 222.0...224.0

1000 : (219.0...227.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.00)

### RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.40  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 13.00  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.10...6.70  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.90  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 850  
Rack travel in m: 15.80...16.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600  
1st pressure hPa : 310  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 470  
Rack travel in m: 13.70...13.90  
3rd pressure hPa : 820  
Rack travel in m: 14.90...15.00  
4th pressure hPa : 950  
Rack travel in m: 15.60...16.00  
5th pressure hPa : -  
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1150  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 225.0...229.0  
1000 s: (222.0...232.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)  
Aneroid pressure h: 1150  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 243.0...247.0  
1000 s: (240.0...250.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.40  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

:



## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 648 818  
  
 Injection pump  
 Pump designation : PE8P120A320LS7801-10  
 EP type number : 0 412 628 851  
 Governor  
 Governor design. : RQ300/950PA762-1  
 Governor no. : 0 421 801 304

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kw : 298.0  
 Rated speed : 1900

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 : 4- 1

Phasing : 0-45-90-135-180-225-  
 : 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

### BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.20...14.40

Del. quantity cm<sup>3</sup>/ : 21.0...21.2

100 s: (20.7...21.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.0

Del. quantity cm<sup>3</sup>/ : 1.2...2.0

100 s: (0.9...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 750

Del. quantity : 210.0...212.0

1000 : (207.0...215.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

### RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00  
Speed rpm : 990...1010  
2nd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 365...405

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 14.00...14.20  
2nd speed rpm : 925  
Rack travel in m: 14.20...14.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 750  
Rack travel mm : 14.20...14.40

Measurement

Speed 1/min : 600  
1st pressure hPa : 320  
Rack travel in m: 11.80...12.00  
2nd pressure hPa : 420  
Rack travel in m: 13.40...13.60  
3rd pressure hPa : 850  
Rack travel in m: 14.30...14.40 \*  
4th pressure hPa : -  
Rack travel in m: 11.50...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 211.0...214.0  
1000 s: (208.0...217.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 225.0...228.0  
1000 s: (222.0...231.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 152.0...154.0  
1000 s: (149.0...157.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 990...1010

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...195.0  
1000 s: (176.0...199.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 648 819  
  
Injection pump  
Pump designation : PE8P120A320L S7801-10  
EP type number : 0 412 628 851  
Governor  
Governor design. : RQ300/900PA762-2  
Governor no. : 0 421 801 305

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 LA

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.00...13.10

Del.quantity cm<sup>3</sup>/ : 19.2...19.5

100 s: (18.9...19.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 1.2...2.0

100 s: (0.9...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 750

Del.quantity : 192.0...195.0

1000 : (189.0...198.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10  
Speed rpm : 940...955  
2nd rack travel in: 4.00  
Speed rpm : 1020...1050  
4th rack travel in: 1150  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 365...405

#### TORQUE CONTROL

Dimension a mm : 1.20  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 600  
Rack travel in m: 14.20...15.40  
3rd speed rpm : 850  
Rack travel in m: 13.50...13.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.20...11.40

#### Measurement

Speed 1/min : 500  
1st pressure hPa : 300  
Rack travel in m: 11.70...11.80  
2nd pressure hPa : 450  
Rack travel in m: 13.20...13.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 750  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 209.0...211.0  
1000 s: (206.0...214.0)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 153.0...155.0  
1000 s: (150.0...158.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 12.10  
Speed rpm : 940...955

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 648 824  
  
Injection pump  
Pump designation : PE8P120A320LS7801-10  
EP type number : 0 412 628 851  
Governor  
Governor design. : RQV300...1050PA797  
Governor no. : 0 421 813 532

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 320.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600  

---

Rack travel in mm : 14.70...14.90  

---

Del. quantity cm<sup>3</sup>/ : 22.1...22.3  

---

100 s: (21.8...22.6)  

---

Spread cm<sup>3</sup> : 0.4  

---

100 s: (0.7)

2nd speed rpm : 300.0  
Rack travel in mm : 6.2...6.6  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.8)

(B) Setting of injection pump  
with governor

GUIDE SLEEVE TRAVEL  
1st speed rpm : 300  
travel mm : 1.20...1.40  
2nd speed rpm : 600  
travel mm : 4.90...5.10  
3rd speed rpm : 1075  
travel mm : 7.40...7.60  
4th speed rpm : 1100  
travel mm : 8.00...8.20  
5th speed rpm : 1150  
travel mm : 9.00...9.20

GUIDE SLEEVE POSITION  
Control-lever position  
Degree: -1  
Speed rpm : 1125  
Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 680  
Del.quantity : 221.0...223.0  
1000 : (218.0...226.0)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

#### Testing:

1st rack travel in: 14.20  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 82...90

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.90  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

#### CONSTANT REGULATION

Speed rpm : 300...500

#### TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 850  
Rack travel in m: 15.80...16.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.70...14.90

#### Measurement

Speed 1/min : 600

1st pressure hPa : 310  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 470  
Rack travel in m: 13.70...13.90

3rd pressure hPa : 820  
Rack travel in m: 14.90...15.00  
4th pressure hPa : 1100  
Rack travel in m: 15.90...16.00  
5th pressure hPa : -  
Rack travel in m: 11.40...11.70

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1150  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 229.0...232.0  
1000 s: (226.0...235.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)  
Aneroid pressure h: 1150  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 246.0...250.0  
1000 s: (243.0...253.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 148.0...150.0  
1000 s: (145.0...153.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 14.20  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 832  
 Injection pump  
 Pump designation : PE8P120A320LS7810-10  
 EP type number : 0 412 628 852  
 Governor  
 Governor design. : RQ300/1050PA858  
 Governor no. : 0 421 801 398

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 368.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 19.50...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600  
 Rack travel in mm : 14.30...14.50  
 Del. quantity cm<sup>3</sup>/ : 23.9...24.1  
 100 s: (23.6...24.4)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.2...5.5  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 900  
 Del. quantity : 239.0...241.0  
 1000 : (236.0...244.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.10  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

Testing:

Speed rpm : 200  
Minimum rack travel: 7.40  
Speed rpm : 300  
Rack travel in mm : 5.20...5.50  
Rack travel in mm : 2.00  
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.35  
2nd speed rpm : 1050  
Rack travel in m: 15.10...15.30  
3rd speed rpm : 800  
Rack travel in m: 13.30...15.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 14.30...14.50

Measurement

Speed 1/min : 600

1st pressure hPa : 320  
Rack travel in m: 10.20...10.40  
2nd pressure hPa : 620  
Rack travel in m: 13.00...13.20  
3rd pressure hPa : 1100  
Rack travel in m: 14.40...14.50  
4th pressure hPa : -  
Rack travel in m: 8.40...8.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

F05

Aneroid pressure h: 1500  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 257.0...260.0  
1000 s: (254.0...263.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 265.0...269.0  
1000 s: (262.0...272.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 133.0...135.0  
1000 s: (130.0...138.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.10  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 648 864

Injection pump  
 Pump designation : PE8P120A320LS7816-10  
 EP type number : 0 412 628 836  
 Governor  
 Governor design. : RQ300/950PA762-7  
 Governor no. : 0 421 801 480

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kw : 353.0  
 Rated speed : 1900

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del.quantity cm<sup>3</sup>/ : 25.4...25.6

100 s: (25.1...25.9)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 254.0...256.0

1000 : (251.0...259.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

**RATED SPEED**

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.20  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1150  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.90  
2nd speed rpm : 950  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 800  
Rack travel in m: 15.50...15.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600  
1st pressure hPa : 350  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 700  
Rack travel in m: 13.80...14.00  
3rd pressure hPa : 1200  
Rack travel in m: 14.80...15.00  
4th pressure hPa : 1500  
Rack travel in m: 15.50...15.70  
5th pressure hPa : -  
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 270.0...273.0  
1000 s: (267.0...276.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 270.0...274.0  
1000 s: (267.0...277.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 14.20  
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 648 871  
  
 Injection pump  
 Pump designation : PE8P120A320LS7801-10  
 EP type number : 0 412 628 851  
 Governor  
 Governor design. : RQ300/1U50PA932  
 Governor no. : 0 421 801 494

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 260.0  
 Rated speed : 2100

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 : 4- 1

Phasing : 0-45-90-135-180-225-  
 : 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

### BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del. quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 650

Del. quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

### RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.00...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75  
2nd speed rpm : 1050  
Rack travel in m: 12.80...13.00  
3rd speed rpm : 850  
Rack travel in m: 13.70...14.00  
4th speed rpm : 700  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

1st version:

Setting

Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 400  
Rack travel in m: 13.40...13.70  
3rd pressure hPa : 850  
Rack travel in m: 14.20...14.30 \*  
4th pressure hPa : -  
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050  
Speed rpm : 1050  
Del.quantity cm3/ : 180.0...183.0  
1000 s: (177.0...186.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 700  
Del.quantity cm3/ : 215.0...219.0  
1000 s: (212.0...222.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Speed rpm : 850  
Del.quantity cm3/ : 206.0...210.0  
1000 s: (203.0...213.0)  
Spread cm3 : 8.00  
1000 s: (12.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA  
 Edition : 22.01.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 873  
 Injection pump  
 Pump designation : PE8P120A920/4LS7166  
 EP type number : 0 412 628 832  
 Governor  
 Governor design. : RQ900PA758-13  
 Governor no. : 0 421 801 501

Customer-spec. information  
 Customer : SCANIA

Engine : DS 14

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-  
 6- 8

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850  
 Rack travel in mm : 12.50...12.60  
 Del.quantity cm3/ : 24.6...24.8  
 100 s: (24.3...25.1)  
 Spread cm3 : 0.7  
 100 s: (1.0)

2nd speed rpm : 500  
 Rack travel in mm : 10.0...10.4  
 Del.quantity cm3/ : 15.8...16.2  
 100 s: (15.6...16.4)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 900  
 Del.quantity : 246.0...248.0  
 1000 : (243.0...251.0)  
 Spread cm3 : 7.00  
 1000 : (10.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 82...90

Testing:  
 1st rack travel in: 11.50  
 Speed rpm : 900...905  
 2nd rack travel in: 4.00  
 Speed rpm : 941...950

Aneroid/Altitude  
 Compensator Test

1st version  
 Setting  
 Speed rpm : 500  
 Pressure hPa : 900

Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.00...10.40

2nd pressure hPa : 365

Rack travel in m: 11.80...11.90

3rd pressure hPa : 215

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 158.0...162.0

1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 900...905

HIGH IDLE

1st version

Rack travel in mm : 5.00...5.20

Spread cm<sup>3</sup> : 4.00

1000 s: (7.00)

Remarks:

:

Start-of-delivery setting with ROBO diaphragm.

APPLICATION

Generator

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 876  
 Injection pump  
 Pump designation : PE8P120A320LS7816-10  
 EP type number : 0 412 628 836  
 Governor  
 Governor design. : RQ300/1050PA932-1  
 Governor no. : 0 421 801 509

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600  
 Rack travel in mm : 13.60...13.80  
 Del. quantity cm<sup>3</sup>/ : 23.4...23.7  
 100 s: (23.1...24.0)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.9...6.5  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 900  
 Del. quantity : 234.0...237.0  
 1000 : (231.0...240.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.30  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 14.30...14.50  
3rd speed rpm : 850  
Rack travel in m: 15.00...15.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600  
1st pressure hPa : 350  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 650  
Rack travel in m: 12.80...13.00  
3rd pressure hPa : 1050  
Rack travel in m: 13.70...13.80 \*  
4th pressure hPa : 1350  
Rack travel in m: 14.60...14.80  
5th pressure hPa : -  
Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600  
Speed rpm : 1050

Del.quantity cm3/ : 252.0...256.0  
1000 s: (249.0...259.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 850  
Del.quantity cm3/ : 270.0...274.0  
1000 s: (267.0...277.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.30  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 10.20...10.50

Remarks:

:

\* Increase in control-rod travel with respect to setting at least 0.1 mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 878  
 Injection pump  
 Pump designation : PE8P120A320LS7801-10  
 EP type number : 0 412 628 851  
 Governor  
 Governor design. : RQ300/950PA762-9  
 Governor no. : 0 421 801 510

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kw : 269.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 800

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.90  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.00...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75  
2nd speed rpm : 950  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 800  
Rack travel in m: 14.20...14.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600  
1st pressure hPa : 350  
Rack travel in m: 11.80...12.00  
2nd pressure hPa : 500  
Rack travel in m: 13.30...13.60  
3rd pressure hPa : 950  
Rack travel in m: 14.10...14.20 \*  
4th pressure hPa : -  
Rack travel in m: 10.60...11.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

F15

Aneroid pressure h: 1150  
Speed rpm : 950  
Del.quantity cm3/ : 190.0...193.0  
1000 s: (187.0...196.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1150  
Speed rpm : 750  
Del.quantity cm3/ : 216.0...219.0  
1000 s: (213.0...222.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 138.0...140.0  
1000 s: (135.0...143.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 881  
 Injection pump  
 Pump designation : PE8P120A320LS7816-10  
 EP type number : 0 412 628 836  
 Governor  
 Governor design. : RQV300...950PA797-13  
 Governor no. : 0 421 813 841

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 U19

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del. quantity cm<sup>3</sup>/ : 25.4...25.6

100 s: (25.1...25.9)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.10...1.40

2nd speed rpm : 700  
 travel mm : 5.50...6.00

3rd speed rpm : 1100  
 travel mm : 8.30...8.80

4th speed rpm : 1090  
 travel mm : 9.70...10.20

5th speed rpm : 1190  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 16.20...18.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 1000  
Del.quantity : 254.0...256.0  
1000 : (251.0...259.0)  
Spread cm3 : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 120...128

#### Testing:

1st rack travel in: 14.20  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 82...90

#### Testing:

Speed rpm : 200  
Minimum rack trave: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50

#### CONSTANT REGULATION

Speed rpm : 300...500

#### TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 950  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 800  
Rack travel in m: 15.50...15.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.60...14.80

#### Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 12.00...12.20  
2nd pressure hPa : 700  
Rack travel in m: 13.80...14.00

3rd pressure hPa : 1200  
Rack travel in m: 14.80...15.00  
4th pressure hPa : 1500  
Rack travel in m: 15.50...15.70  
5th pressure hPa : -  
Rack travel in m: 10.20...10.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1600  
Speed rpm : 950  
Del.quantity cm3/ : 270.0...273.0  
1000 s: (267.0...276.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm3/ : 270.0...274.0  
1000 s: (267.0...277.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 14.20  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 648 882

Injection pump  
 Pump designation : PE8P120A320LS7801-10  
 EP type number : 0 412 628 851  
 Governor  
 Governor design. : RQV300...950PA797-35  
 Governor no. : 0 421 813 974

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 269.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500  


---

 Rack travel in mm : 14.00...14.20  


---

 Del. quantity cm<sup>3</sup>/ : 20.3...20.5  


---

 100 s: (20.0...20.8)

Spread cm<sup>3</sup> : 0.5  


---

 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.0...6.4  
 Del. quantity cm<sup>3</sup>/ : 1.2...1.8  
 100 s: (0.9...2.1)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.10...1.50  
 2nd speed rpm : 600  
 travel mm : 4.80...5.30  
 3rd speed rpm : 950  
 travel mm : 7.60...8.10  
 4th speed rpm : 1050  
 travel mm : 9.00...9.50  
 5th speed rpm : 1100  
 travel mm : 9.90...10.40

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 990  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 500  
Aneroid pressure h: 1150  
Del.quantity : 203.0...205.0  
1000 : (200.0...208.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 11.90  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 84...92

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.00...6.40

CONSTANT REGULATION  
Speed rpm : 300...500

TORQUE CONTROL  
Dimension a mm : ?  
2nd speed rpm : 950  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 500  
Rack travel in m: 14.20...14.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : -  
Rack travel mm : 10.60...11.00

Measurement  
Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 500  
Rack travel in m: 12.60...12.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1150  
Speed rpm : 950  
Del.quantity cm3/ : 189.0...192.0  
1000 s: (186.0...195.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks: :

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 889

Injection pump  
Pump designation : PE8P120A320LS7816-10  
EP type number : 0 412 626 836  
Governor  
Governor design. : RQ300/950PA932-2  
Governor no. : 0 421 801 526

Customer spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 362.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del. quantity cm<sup>3</sup>/ : 25.5...25.7

100 s: (25.2...26.0)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del. quantity cm<sup>3</sup>/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del. quantity : 255.0...257.0

1000 : (252.0...260.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.20  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1150  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.90  
2nd speed rpm : 950  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 800  
Rack travel in m: 15.50...15.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600  
1st pressure hPa : 350  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 700  
Rack travel in m: 13.80...14.00  
3rd pressure hPa : 1200  
Rack travel in m: 14.80...15.00  
4th pressure hPa : 1300  
Rack travel in m: 15.20...15.40  
5th pressure hPa : -  
Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600  
Speed rpm : 950

Del.quantity cm3/ : 266.0...269.0  
1000 s: (263.0...272.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm3/ : 267.0...271.0  
1000 s: (264.0...274.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 141.0...143.0  
1000 s: (138.0...146.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 14.20  
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 890  
 Injection pump  
 Pump designation : PE8P120A320LS7801-10  
 EP type number : 0 412 628 851  
 Governor  
 Governor design. : RQ300/950PA932-5  
 Governor no. : 0 421 801 621

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kw : 269.0  
 Rated speed : 1900

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del. quantity cm<sup>3</sup>/ : 20.3...20.5

100 s: (20.0...20.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 500

Aneroid pressure h: 1150

Del. quantity : 203.0...205.0

1000 : (200.0...208.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

**RATED SPEED**

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.90  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 12.00  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.00...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75  
2nd speed rpm : 950  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 800  
Rack travel in m: 14.20...14.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : -  
Rack travel mm : 10.60...11.00

Measurement

Speed 1/min : 600  
1st pressure hPa : 350  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 500  
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1150  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 189.0...192.0  
1000 s: (186.0...195.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 136.0...138.0  
1000 s: (133.0...141.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 990...1000

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 26.10.93  
Replaces : 21.08.92  
Test oil : ISO-4113  
  
Combination no. : 0 402 648 893X  
  
Injection pump  
Pump designation : PE8P120A320LS7835-10  
EP type number : 0 412 628 853  
Governor  
Governor design. : RQ300/950PA971-2  
Governor no. : 0 421 801 548

Cust. part no. : 0200740502

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm<sup>3</sup>/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1200

Del.quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.10  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1200  
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 14.65...14.75  
2nd speed rpm : 950  
Rack travel in m: 14.00...14.20  
3rd speed rpm : 800  
Rack travel in m: 14.60...14.80

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 750  
Pressure hPa : 1200  
Rack travel mm : 14.65...14.75

Measurement

Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: ?  
2nd pressure hPa : 250  
Rack travel in m: 10.95...11.15  
3rd pressure hPa : -  
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 215.5...219.5  
1000 s: (211.5...222.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 40.0...70.0  
1000 s: (36.0...74.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 26.10.93  
 Replaces : 21.08.92  
 Test oil : ISO-4113

Combination no. : 0 402 648 894X

Injection pump  
 Pump designation : PE8P120A320LS7835-10  
 EP type number : 0 412 628 853  
 Governor  
 Governor design. : RQV300...950PA797-18  
 Governor no. : 0 421 813 886

Cust. part no. : 0200740702

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del. quantity cm<sup>3</sup>/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.00...1.50

2nd speed rpm : 567  
 travel mm : 4.40...4.90

3rd speed rpm : 780  
 travel mm : 6.10...6.60

4th speed rpm : 1009  
 travel mm : 8.30...8.80

5th speed rpm : 1092  
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1  
Speed rpm : 980  
Rack travel in mm : 15.20...17.80

#### FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Aneroid pressure h: 1200  
Del.quantity : 230.0...232.0  
1000 : (227.0...235.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 122...130

Testing:  
1st rack travel in: 13.10  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1200  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 80...88

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION  
Speed rpm : 250...360

TORQUE CONTROL  
Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 14.65...14.75  
2nd speed rpm : 950  
Rack travel in m: 14.00...14.20  
3rd speed rpm : 800  
Rack travel in m: 14.60...14.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 750  
Pressure hPa : 1200  
Rack travel mm : 14.65...14.75

F27

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: ?  
2nd pressure hPa : 250  
Rack travel in m: 10.95...11.15  
3rd pressure hPa : -  
Rack travel in m: 10.30...10.60

#### START CUT-OUT

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 215.5...219.5  
1000 s: (212.5...222.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.10  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 200.0...230.0  
1000 s: (196.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 26.10.93  
 Replaces : 26.02.93  
 Test oil : ISO-4113

Combination no. : 0 402 648 895X

Injection pump  
 Pump designation : PE8P120A320LS7835-10  
 EP type number : 0 412 628 853  
 Governor  
 Governor design. : RQ300/1050PA972-1  
 Governor no. : 0 421 801 545

Cust. part no. : 0180742102

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del. quantity cm<sup>3</sup>/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.9...6.5  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.70...1.90  
 2nd speed rpm : 510  
 travel mm : 5.90...6.10  
 3rd speed rpm : 845  
 travel mm : 6.30...6.50  
 4th speed rpm : 1109  
 travel mm : 6.70...6.90  
 5th speed rpm : 1270  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION  
 Control-lever position

Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750  
Aneroid pressure h: 1200  
Del. quantity : 230.0...232.0  
1000 : (227.0...235.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 13.00  
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.90...14.10  
2nd speed rpm : 800  
Rack travel in m: 14.60...14.80  
3rd speed rpm : 750  
Rack travel in m: 14.65...14.75

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 750

Pressure hPa : 1200  
Rack travel mm : 14.65...14.75

Measurement

Speed 1/min : 400

1st pressure hPa : 550

Rack travel in m: ?

2nd pressure hPa : 250

Rack travel in m: 11.15...11.35

3rd pressure hPa : -

Rack travel in m: 10.10...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 213.5...217.5  
1000 s: (210.5...220.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 131.0...133.0  
1000 s: (128.0...136.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 40.0...70.0  
1000 s: (36.0...74.0)

Remarks:



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 14,7 w 2  
 Edition : 29.11.91  
 Replaces : 09.91  
 Test oil : ISO-4113

Combination no. : 0 402 648 898

Injection pump  
 Pump designation : PE8P120A320LS7838  
 EP type number : 0 412 628 848  
 Governor  
 Governor design. : RQ300/950PA971-4  
 Governor no. : 0 421 801 558

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 320.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 600

Rack travel in mm : 13.80...14.00

Del.quantity cm<sup>3</sup>/ : 22.3...22.5

100 s: (22.0...22.8)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 223.0...225.0

1000 : (220.0...228.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

**RATED SPEED**

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.50

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1070...1100

4th rack travel in: 1150

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

Testing:

Speed rpm : 200

Minimum rack travel: 7.80

Speed rpm : 300

Rack travel in mm : 6.20...6.80

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?

2nd speed rpm : 950

Rack travel in m: 14.50...14.70

3rd speed rpm : 800

Rack travel in m: 15.00...15.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 900

Rack travel mm : 13.80...14.00

Measurement

Speed 1/min : 600

1st pressure hPa : 350

Rack travel in m: 10.10...10.30

2nd pressure hPa : 650

Rack travel in m: 12.80...13.00

3rd pressure hPa : 1100

Rack travel in m: 13.90...14.10 \*

4th pressure hPa : 1350

Rack travel in m: 14.70...15.00

5th pressure hPa : -

Rack travel in m: 8.90...9.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600

Speed rpm : 950

Del.quantity cm<sup>3</sup>/ : 234.0...237.0

1000 s: (231.0...240.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.0)

Aneroid pressure h: 1600

Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 243.0...247.0

1000 s: (240.0...250.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 138.0...140.0

1000 s: (135.0...143.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 8.90...9.20

Remarks:

:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 03.12.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 898  
 Injection pump  
 Pump designation : PE8P120A320LS7838-10  
 EP type number : 0 412 628 854  
 Governor  
 Governor design. : RQ300/950PA971-4  
 Governor no. : 0 421 801 558

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 320.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.80...14.00

Del.quantity cm<sup>3</sup>/ : 22.3...22.5

100 s: (22.0...22.8)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 223.0...225.0

1000 : (220.0...228.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.50  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1150  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 950  
Rack travel in m: 14.50...14.70  
3rd speed rpm : 800  
Rack travel in m: 15.00...15.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.80...14.00

Measurement

Speed 1/min : 600  
1st pressure hPa : 350  
Rack travel in m: 10.10...10.30  
2nd pressure hPa : 650  
Rack travel in m: 12.80...13.00  
3rd pressure hPa : 1100  
Rack travel in m: 13.90...14.10 \*  
4th pressure hPa : 1350  
Rack travel in m: 14.70...15.00  
5th pressure hPa : -  
Rack travel in m: 8.90...9.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600  
Speed rpm : 950

Del.quantity cm3/ : 234.0...237.0  
1000 s: (231.0...240.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm3/ : 243.0...247.0  
1000 s: (240.0...250.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 138.0...140.0  
1000 s: (135.0...143.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 1000  
Rack travel in mm : 8.90...9.20

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 21.10.93  
 Replaces : 11.92  
 Test oil : ISO-4113

Combination no. : 0 402 648 898x

Injection pump  
 Pump designation : PE8P120A320LS7838-10  
 EP type number : 0 412 628 854  
 Governor  
 Governor design. : RQ300/950PA971-4  
 Governor no. : 0 421 801 558

Cust. part no. : 0200743402

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.40...14.50

Del. quantity cm<sup>3</sup>/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.2...6.8  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 1200  
 Del. quantity : 237.0...239.0  
 1000 : (234.0...242.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.30  
Speed rpm : 990...1006  
2nd rack travel in: 4.90  
Speed rpm : 1070...1100  
4th rack travel in: 11.50  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 950  
Rack travel in m: 14.20...14.40  
3rd speed rpm : 600  
Rack travel in m: 14.40...14.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1200  
Rack travel mm : 14.40...14.50

Measurement

Speed 1/min : 400  
1st pressure hPa : 550  
Rack travel in m: 12.55...12.65  
2nd pressure hPa : 250  
Rack travel in m: 9.80...10.80  
3rd pressure hPa : -  
Rack travel in m: 8.90...9.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 950  
Del.quantity cm3/ : 230.0...234.0  
1000 s: (227.0...237.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.30  
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 8.90...9.30

Remarks:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB  
 Edition : 26.10.93  
 Replaces : 18.12.92  
 Test oil : ISO-4113

Combination no. : 0 402 648 899

Injection pump  
 Pump designation : PE8P120A320LS7839-10  
 EP type number : 0 412 628 855  
 Governor  
 Governor design. : RQ300/950PA971-5  
 Governor no. : 0 421 801 559

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
 Rated speed : 1900

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 550

Rack travel in mm : 15.10...15.30

Del.quantity cm3/ : 26.5...26.7

100 s: (26.2...27.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 550

Aneroid pressure h: 900

Del.quantity : 265.0...267.0

1000 : (262.0...270.0)

Spread cm3 : 6.00

1000 : (9.00)

**RATED SPEED**

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.50

Speed rpm : 990...1006

2nd rack travel in: 4.00

Speed rpm : 1075...1105

4th rack travel in: 11.50

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.3

Testing:

Speed rpm : 200

Minimum rack travel: 7.60

Speed rpm : 300

Rack travel in mm : 6.20...6.40

Rack travel in mm : 2.00

Speed rpm : 370...410

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 550

Pressure hPa : 900

Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 400

1st pressure hPa : 550

Rack travel in m: 12.90...13.00

2nd pressure hPa : 250

Rack travel in m: 10.15...10.25

3rd pressure hPa : 900

Rack travel in m: 15.10...15.30

4th pressure hPa : 1100

Rack travel in m: 15.30...15.40 \*

5th pressure hPa : -

Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000

Speed rpm : 950

Del.quantity cm3/ : 281.0...284.0

1000 s: (278.0...287.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1300

Speed rpm : 700

Del.quantity cm3/ : 271.5...274.5

1000 s: (268.5...277.5)

Spread cm3 : -

1000 s: (-)

Aneroid pressure h: 550

Speed rpm : 400

Del.quantity cm3/ : 203.0...206.0

1000 s: (200.0...209.0)

Spread cm3 : -

1000 s: (-)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 132.0...134.0

1000 s: (129.0...137.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.30

Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 80.0...100.0

1000 s: (76.0...104.0)

Rack travel in mm : 9.10...9.50

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 901  
 Injection pump  
 Pump designation : PE8P120A320LS7840-10  
 EP type number : 0 412 628 856  
 Governor  
 Governor design. : RQV300...1050PA797  
 -21  
 Governor no. : 0 421 813 894

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kw : 250.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.30...13.50

Del.quantity cm<sup>3</sup>/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.10...1.60

2nd speed rpm : 470  
 travel mm : 3.00...3.50

3rd speed rpm : 830  
 travel mm : 5.90...6.40

4th speed rpm : 1110  
 travel mm : 8.20...8.70

5th speed rpm : 1183  
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 206.0...208.0  
1000 : (203.0...211.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 116...124

Testing:

1st rack travel in: 11.90  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 84...92

Testing:

Speed rpm : 200  
Minimum rack travel: 7.90  
Speed rpm : 300  
Rack travel in mm : 6.10...6.70

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 1050  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 800  
Rack travel in m: 14.20...14.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.30...13.50

Measurement

Speed 1/min : 600  
1st pressure hPa : 300  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 650

Rack travel in m: 12.60...12.80  
3rd pressure hPa : 1050  
Rack travel in m: 13.40...13.50 \*  
4th pressure hPa : 1250  
Rack travel in m: 14.00...14.20  
5th pressure hPa : -  
Rack travel in m: 10.60...10.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 194.0...197.0  
1000 s: (191.0...200.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 220.0...224.0  
1000 s: (217.0...227.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 123.0...125.0  
1000 s: (120.0...128.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (176.0...204.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 26.10.93  
 Replaces : 18.12.92  
 Test oil : ISO-4113

Combination no. : 0 402 648 902

Injection pump  
 Pump designation : PE8P120A320LS7839-10  
 EP type number : 0 412 628 855  
 Governor  
 Governor design. : RQ300/1050PA972-5  
 Governor no. : 0 421 801 564

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.10...15.30

Del.quantity cm<sup>3</sup>/ : 26.5...26.7

100 s: (26.2...27.0)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 900

Del.quantity : 265.0...267.0

1000 : (262.0...270.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.30  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 1050  
Rack travel in m: 16.20...16.40  
3rd speed rpm : 800  
Rack travel in m: 16.40...16.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 550  
Pressure hPa : 900  
Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 400  
1st pressure hPa : 550  
Rack travel in m: 12.90...13.00  
2nd pressure hPa : 250  
Rack travel in m: 10.10...10.30  
3rd pressure hPa : 1100  
Rack travel in m: 15.30...15.40 \*  
4th pressure hPa : 1300  
Rack travel in m: 15.70...15.80  
5th pressure hPa : -  
Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000  
Speed rpm : 1050

Del.quantity cm3/ : 271.0...274.0  
1000 s: (268.0...277.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 2000  
Speed rpm : 800  
Del.quantity cm3/ : 283.0...287.0  
1000 s: (280.0...290.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1300  
Speed rpm : 700  
Del.quantity cm3/ : 272.0...275.0  
1000 s: (269.0...278.0)  
Spread cm3 : -  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.30  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 9.10...9.50

Remarks:

:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 27.10.93  
 Replaces : 03.12.92  
 Test oil : ISO-4113

Combination no. : 0 402 648 906X

Injection pump  
 Pump designation : PE8P120A320LS7838-10  
 EP type number : 0 412 628 854  
 Governor  
 Governor design. : RQ300/1050PA972-6  
 Governor no. : 0 421 801 569

Cust. part no. : 0200743602

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.40...14.50

Del.quantity cm<sup>3</sup>/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.2...6.8  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 1200  
 Del.quantity : 237.0...239.0  
 1000 : (234.0...242.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.30  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack trave: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 600  
Rack travel in m: 14.40...14.50  
2nd speed rpm : 1050  
Rack travel in m: 14.20...14.40

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1200  
Rack travel mm : 14.40...14.50

Measurement

Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 12.55...12.65  
2nd pressure hPa : 250  
Rack travel in m: 9.80...10.00  
3rd pressure hPa : -  
Rack travel in m: 8.90...9.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 222.0...226.0  
1000 s: (219.0...229.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30  
Speed rpm : 1090...1106

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 27.10.93  
 Replaces : 18.12.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 907  
 Injection pump  
 Pump designation : PE8P120A320LS7839-10  
 EP type number : 0 412 628 855  
 Governor  
 Governor design. : RQV300...950PA797-22  
 Governor no. : 0 421 813 909

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.10...15.30

Del. quantity cm<sup>3</sup>/ : 26.5...26.7

100 s: (26.2...27.0)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 617

travel mm : 5.00...5.50

3rd speed rpm : 780

travel mm : 6.10...6.60

4th speed rpm : 1010

travel mm : 8.30...8.80

5th speed rpm : 1092

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 900  
Del.quantity : 265.0...267.0  
1000 : (262.0...270.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 118...126

Testing:  
1st rack travel in: 15.50  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1100...1130  
4th rack travel in: 1200  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 82...90

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION  
Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 550  
Pressure hPa : 900  
Rack travel mm : 15.00...15.40

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 12.90...13.00  
2nd pressure hPa : 250  
Rack travel in m: 10.10...10.30  
3rd pressure hPa : 1100  
Rack travel in m: 15.20...15.40 \*  
4th pressure hPa : 1300  
Rack travel in m: 15.60...15.70 \*  
5th pressure hPa : -  
Rack travel in m: 9.10...9.40

#### START CUT-OUT

Speed 1/min : 240 (260)

G17

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 2000  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 281.0...284.0  
1000 s: (278.0...287.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1300  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 271.5...274.5  
1000 s: (268.5...277.5)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 15.00  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 275.0...295.0  
1000 s: (271.0...299.0)

Remarks: : \* N = 700

\* Increase in control-rod travel with respect to setting at least 0.1 mm



## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB 14,7 w 1  
 Edition : 27.03.92  
 Replaces : 04.91  
 Test oil : ISO-4113

Combination no. : 0 402 648 908

Injection pump  
 Pump designation : PE8P120A320LS7838  
 EP type number : 0 412 628 848  
 Governor  
 Governor design. : RQV300...950PA797-23  
 Governor no. : 0 421 813 910

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kw : 320.0  
 Rated speed : 1900

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

### BASIC SETTING

1st speed rpm : 600  


---

 Rack travel in mm : 13.80...14.00  


---

 Del.quantity cm<sup>3</sup>/ : 22.3...22.5  


---

 100 s: (22.0...22.8)  


---

 Spread cm<sup>3</sup> : 0.6  


---

 100 s: (0.9)  


---

2nd speed rpm : 300.0  
 Rack travel in mm : 5.4...5.8  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.00...1.50  
 2nd speed rpm : 617  
 travel mm : 5.00...5.50  
 3rd speed rpm : 780  
 travel mm : 6.10...6.60  
 4th speed rpm : 1009  
 travel mm : 8.30...8.80  
 5th speed rpm : 1092  
 travel mm : 9.80...10.30

### GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1020  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 223.0...225.0  
1000 : (220.0...228.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 120...128

#### Testing:

1st rack travel in: 13.50  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 82...90

#### Testing:

Speed rpm : 200  
Minimum rack trave: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.20...6.80

#### CONSTANT REGULATION

Speed rpm : 300...500

#### TORQUE CONTROL

Dimension a mm : 0.70  
2nd speed rpm : 950  
Rack travel in m: 14.50...14.70  
3rd speed rpm : 800  
Rack travel in m: 15.20...15.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.80...14.00

#### Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 650  
Rack travel in m: 12.80...13.00

3rd pressure hPa : 1100  
Rack travel in m: 13.90...14.10 \*  
4th pressure hPa : 1350  
Rack travel in m: 15.80...15.00  
5th pressure hPa : -  
Rack travel in m: 9.10...9.30

#### START CUT-OUT

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1600  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 234.0...237.0  
1000 s: (231.0...240.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 243.0...247.0  
1000 s: (240.0...250.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 138.0...140.0  
1000 s: (135.0...143.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.50  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB  
 Edition : 10.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 908  
 Injection pump  
 Pump designation : PE8P120A320LS7838-10  
 EP type number : 0 412 628 854  
 Governor  
 Governor design. : RQV300...950PA797-23  
 Governor no. : 0 421 813 910

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 1900

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 600

Rack travel in mm : 13.80...14.00

Del. quantity cm<sup>3</sup>/ : 22.3...22.5

100 s: (22.0...22.8)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.4...5.8  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.00...1.50

2nd speed rpm : 617  
 travel mm : 5.00...5.50

3rd speed rpm : 780  
 travel mm : 6.10...6.60

4th speed rpm : 1009  
 travel mm : 8.30...8.80

5th speed rpm : 1092  
 travel mm : 9.80...10.30

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 223.0...225.0  
1000 : (220.0...228.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 120...128

#### Testing:

1st rack travel in: 13.50  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 82...90

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.20...6.80

#### CONSTANT REGULATION

Speed rpm : 300...500

#### TORQUE CONTROL

Dimension a mm : 0.70  
2nd speed rpm : 950  
Rack travel in m: 14.50...14.70  
3rd speed rpm : 800  
Rack travel in m: 15.20...15.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.80...14.00

#### Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 650  
Rack travel in m: 12.80...13.00

3rd pressure hPa : 1100  
Rack travel in m: 13.90...14.10 \*  
4th pressure hPa : 1350  
Rack travel in m: 15.80...15.00  
5th pressure hPa : -  
Rack travel in m: 9.10...9.30

#### START CUT-OUT

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1600  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 234.0...237.0  
1000 s: (231.0...240.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 243.0...247.0  
1000 s: (240.0...250.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 138.0...140.0  
1000 s: (135.0...143.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.50  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB  
 Edition : 27.10.93  
 Replaces : 27.11.92  
 Test oil : ISO-4113

Combination no. : 0 402 648 908X

Injection pump  
 Pump designation : FE8P120A320LS7833-10  
 EP type number : 0 412 628 854  
 Governor  
 Governor design. : RQV300...950PA797-23  
 Governor no. : 0 421 813 910

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kw : 320.0  
 Rated speed : 1900

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 600

Rack travel in mm : 14.40...14.50

Del. quantity cm<sup>3</sup>/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.4...5.8  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.00...1.50

2nd speed rpm : 617  
 travel mm : 5.00...5.50

3rd speed rpm : 780  
 travel mm : 6.10...6.60

4th speed rpm : 1009  
 travel mm : 8.30...8.80

5th speed rpm : 1092  
 travel mm : 9.80...10.30

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1

Speed rpm : 1020  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 1200  
Del.quantity : 237.0...239.0  
1000 : (234.0...242.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 120...128

Testing:  
1st rack travel in: 13.30  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 82...90

Testing:  
Speed rpm : 200  
Minimum rack trave: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION  
Speed rpm : 300...500

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 600  
Rack travel in m: 14.40...14.50  
2nd speed rpm : 950  
Rack travel in m: 14.20...14.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1200  
Rack travel mm : 14.40...14.50

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 12.60...12.70  
2nd pressure hPa : 250

Rack travel in m: 9.80...10.00  
3rd pressure hPa : -  
Rack travel in m: 8.90...9.20

#### START CUT-OUT

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 230.0...234.0  
1000 s: (227.0...237.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.30  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 909  
 Injection pump  
 Pump designation : PE8P120A320LS7&4C-10  
 EP type number : 0 412 628 856  
 Governor  
 Governor design. : RQ300/950PA971-6  
 Governor no. : 0 421 801 575

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600  
 Rack travel in mm : 13.40...13.60  
 Del. quantity cm<sup>3</sup>/ : 20.7...20.9  
 100 s: (20.4...21.2)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.0...7.4  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 800  
 Del. quantity : 207.0...209.0  
 1000 : (204.0...212.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.60  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1150  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 950  
Rack travel in m: 13.50...13.70  
3rd speed rpm : 800  
Rack travel in m: 14.10...14.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 13.40...13.60

Measurement

Speed 1/min : 600  
1st pressure hPa : 345  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 600  
Rack travel in m: 12.90...13.10  
3rd pressure hPa : 1050  
Rack travel in m: 13.60...13.70  
4th pressure hPa : 1100  
Rack travel in m: 13.90...14.10  
5th pressure hPa : -  
Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 950

Del.quantity cm3/ : 208.5...211.5  
1000 s: (205.5...214.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 800  
Del.quantity cm3/ : 225.0...229.0  
1000 s: (221.0...232.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 127.0...129.0  
1000 s: (124.0...132.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

Full load rack tr: 12.60  
Speed rpm : 990...1005

Remarks:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 27.10.93  
 Replaces : 18.12.92  
 Test oil : ISO-4113

Combination no. : 0 402 648 911

Injection pump  
 Pump designation : PE8P120A320LS7839-10  
 EP type number : 0 412 628 855  
 Governor  
 Governor design. : RQV300...1050PA797  
 -27  
 Governor no. : 0 421 813 916

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kw : 370.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.10...15.30

Del.quantity cm<sup>3</sup>/ : 26.5...26.7

100 s: (26.2...27.0)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.00...1.50

2nd speed rpm : 558  
 travel mm : 4.30...4.80

3rd speed rpm : 820  
 travel mm : 5.90...6.40

4th speed rpm : 1108  
 travel mm : 8.30...8.80

5th speed rpm : 1183  
 travel mm : 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550  
Aneroid pressure h: 900  
Del.quantity : 265.0...267.0  
1000 : (262.0...270.0)  
Spread cm3 : 6.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 118...126

Testing:

1st rack travel in: 15.30  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 76...84

Testing:

Speed rpm : 200  
Minimum rack trave: 6.80  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.20  
2nd speed rpm : 1050  
Rack travel in m: 16.20...16.40  
3rd speed rpm : 800  
Rack travel in m: 16.40...16.60

Aneroid/Altitude

Compensator Test

1st version

Setting  
Speed rpm : 550  
Pressure hPa : 900  
Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 12.90...13.00  
2nd pressure hPa : 250

Rack travel in m: 10.10...10.30  
3rd pressure hPa : 1300  
Rack travel in m: 15.70...15.80 \*  
4th pressure hPa : 1100  
Rack travel in m: 15.30...15.50 \*  
5th pressure hPa : -  
Rack travel in m: 9.10...9.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000  
Speed rpm : 1050  
Del.quantity cm3/ : 271.0...274.0  
1000 s: (268.0...277.0)

Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: 2000  
Speed rpm : 800  
Del.quantity cm3/ : 283.0...287.0  
1000 s: (280.0...290.0)

Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.30  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 275.0...295.0  
1000 s: (271.0...299.0)

Remarks:

: \* N = 700

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 26.02.93  
 Replaces : 08.92  
 Test oil : ISO-4113

Combination no. : 0 402 648 914X

Injection pump  
 Pump designation : PE8P120A320LS7835-10  
 EP type number : 0 412 628 853  
 Governor  
 Governor design. : RQV300...1050PA797  
 -30

Governer no. : 0 421 813 921

Cust. part no. : 0180742202

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 Firing order : 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.60...14.80

Del.quantity cm<sup>3</sup>/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.9...6.5  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.00...1.50  
 2nd speed rpm : 608  
 travel mm : 4.80...5.30  
 3rd speed rpm : 820  
 travel mm : 5.90...6.40  
 4th speed rpm : 1108  
 travel mm : 8.10...8.60  
 5th speed rpm : 1190  
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION  
 Control-lever position

Degree: -1  
Speed rpm : 1130  
Rack travel in mm : 12.60...15.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750  
Aneroid pressure h : 1200  
Del. quantity : 230.0...232.0  
1000 : (227.0...235.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

RATED SPEED:

1st version  
Control lever  
position degrees: 118...126

Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever  
position degrees: 82...90

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : 0.60  
2nd speed rpm : 1050  
Rack travel in m: 13.90...14.10  
3rd speed rpm : 800  
Rack travel in m: 14.60...14.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.30...10.60

Measurement

Speed 1/min : 500

H02

1st pressure hPa : 250  
Rack travel in m: 11.20...11.30  
2nd pressure hPa : 600  
Rack travel in m: 13.30...13.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 213.5...217.5  
1000 s: (210.5...220.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 131.0...133.0  
1000 s: (128.0...136.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 200.0...230.0  
1000 s: (196.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 27.10.93  
 Replaces : 26.02.93  
 Test oil : ISO-4113

Combination no. : 0 402 648 915X

Injection pump  
 Pump designation : PE8P120A320LS7835-10  
 EP type number : 0 412 628 853  
 Governor  
 Governor design. : RQ300/1050PA993-1  
 Governor no. : 0 421 801 582

Cust. part no. : 0200747202

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.65...14.75

Del. quantity cm<sup>3</sup>/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.9...6.5  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Aneroid pressure h: 1200  
 Del. quantity : 230.0...232.0  
 1000 : (227.0...235.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.70  
2nd speed rpm : 1050  
Rack travel in m: 13.90...14.10  
3rd speed rpm : 800  
Rack travel in m: 14.60...14.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 750  
Pressure hPa : 1200  
Rack travel mm : 14.65...14.75

Measurement

Speed 1/min : 400  
1st pressure hPa : 550  
Rack travel in m: ?  
2nd pressure hPa : 250  
Rack travel in m: 11.15...11.35  
3rd pressure hPa : -  
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

H04

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 213.5...217.5  
1000 s: (210.5...220.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 188.5...191.5  
1000 s: (185.5...194.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 131.0...133.0  
1000 s: (128.0...136.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...230.0  
1000 s: (196.0...234.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 14,5 e2  
Edition : 08.10.91  
Replaces : 06.91  
Test oil : ISO-4113  
  
Combination no. : 0 402 648 916A  
  
Injection pump  
Pump designation : PE8P120A520LS7818-1  
EP type number : 0 412 628 857  
Governor  
Governor design. : RQV250...1150PA902  
Governor no. : 0 421 813 720

Cust. part no. : 3-7007

Customer-spec. information  
Customer : MAN

Engine : D2848LXE 40

1st version kW : 500.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

H05

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
: (4.45...4.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 25.9...26.1  
100 s: (25.6...26.4)

Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 500  
Rack travel in mm : 8.9...9.1  
Del. quantity cm<sup>3</sup>/ : 14.9...15.1  
100 s: (14.6...15.4)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

3rd speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del. quantity cm<sup>3</sup>/ : 5.2...6.0 \*  
100 s: (-)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.40...1.60  
2nd speed rpm : 450  
travel mm : 3.40...4.00  
3rd speed rpm : 850  
travel mm : 6.30...6.90  
4th speed rpm : 1150  
travel mm : 9.40...9.60  
5th speed rpm : 1450  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1210

Rack travel in mm : 15.20...17.80

#### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure h: 1300  
Del. quantity : 259.0...261.0  
1000 : (256.0...264.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 118...126

Testing:

1st rack travel in: 11.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 14.50  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 80...88

Testing:

Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 430...490

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 100  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 470  
Rack travel in m: 12.30...12.60

START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 149.0...151.0  
1000 s: (146.0...154.0)

#### BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 100.0...120.0 \*  
1000 s: (-)

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 0 \*\*  
1000 s: (-)

#### HIGH IDLE

1st version

Speed rpm : 500  
Rack travel in mm : 0.00...7.00  
Del. quantity cm<sup>3</sup>/ : 0 \*\*  
1000 s: (-)

2nd version

Speed rpm : 500  
Rack travel in mm : 0.00...7.50  
Del. quantity cm<sup>3</sup>/ : < 50.0 \*\*  
1000 s: (-)

3rd version

Speed rpm : 500  
Rack travel in mm : 8.30...8.50  
Del. quantity cm<sup>3</sup>/ : 125.0... \*\*  
1000 s: (-)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del. quantity cm<sup>3</sup>/ : 52.0...60.0 \*  
1000 s: (-)

Remarks:



\* applies to cylinders 2, 3, 4 and 8  
\*\* applies for cylinders 1, 5, 6, and 7

APPLICATION



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

## Note remarks

Test sheet : MB  
 Edition : 27.10.93  
 Replaces : 18.12.92  
 Test oil : ISO-4113

Combination no. : 0 402 648 917

Injection pump  
 Pump designation : PE8P120A320LS7839-10  
 EP type number : 0 412 628 855  
 Governor  
 Governor design. : RQ300/1050PA993-3  
 Governor no. : 0 421 801 601

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 550

Rack travel in mm : 15.10...15.30

Del. quantity cm<sup>3</sup>/ : 26.5...26.7

100 s: (26.2...27.0)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 550

Aneroid pressure h: 900

Del. quantity : 265.0...267.0

1000 : (262.0...270.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

**RATED SPEED**

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.30  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 12.50  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

Testing:

Speed rpm : 200  
Minimum rack travel: 7.20  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 1050  
Rack travel in m: 16.20...16.40  
3rd speed rpm : 800  
Rack travel in m: 16.40...16.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 550  
Pressure hPa : 900  
Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 12.90...13.00  
2nd pressure hPa : 250  
Rack travel in m: 10.10...10.30  
3rd pressure hPa : 1100  
Rack travel in m: 15.30...15.50 \*  
4th pressure hPa : 1300  
Rack travel in m: 15.70...15.80 \*  
5th pressure hPa : -  
Rack travel in m: 9.10...9.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000  
Speed rpm : 1050  
Del.quantity cm3/ : 271.0...274.0  
1000 s: (268.0...277.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 2000  
Speed rpm : 800  
Del.quantity cm3/ : 283.0...287.0  
1000 s: (280.0...290.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 15.30  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 275.0...295.0  
1000 s: (271.0...299.0)

Remarks:

: \* N = 700

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 27.10.93  
 Replaces : 03.12.92  
 Test oil : ISO-4113

Combination no. : 0 402 648 918X

Injection pump  
 Pump designation : PE8P120A320LS7838-10  
 EP type number : 0 412 628 354  
 Governor  
 Governor design. : RQ300/1050PA993-4  
 Governor no. : 0 421 801 602

Cust. part no. : 021074102

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.40...14.50

Del. quantity cm<sup>3</sup>/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1020

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1200

Del. quantity : 237.0...239.0

1000 : (234.0...242.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 1020  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.30  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 600  
Rack travel in m: 14.40...14.50  
2nd speed rpm : 1050  
Rack travel in m: 14.20...14.40

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1200  
Rack travel mm : 14.40...14.50

Measurement

Speed 1/min : 400  
1st pressure hPa : 550  
Rack travel in m: 12.55...12.65  
2nd pressure hPa : 250  
Rack travel in m: 9.80...10.00  
3rd pressure hPa : -  
Rack travel in m: 8.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 222.0...226.0  
1000 s: (219.0...229.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...134.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.30  
Speed rpm : 1090...1106

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 28.10.93  
 Replaces : 18.12.92  
 Test oil : ISO-4113

Combination no. : 0 402 648 921

Injection pump  
 Pump designation : PE8P120A320LS7839-10  
 EP type number : 0 412 628 855  
 Governor  
 Governor design. : RQ300/950PA993-8  
 Governor no. : 0 421 801 618

Customer spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.10...15.30

Del. quantity cm<sup>3</sup>/ : 26.5...26.7

100 s: (26.2...27.0)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 900

Del. quantity : 265.0...267.0

1000 : (262.0...270.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.50  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
4th rack travel in: 1150  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

Testing:

Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 550  
Pressure hPa : 900  
Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 400  
1st pressure hPa : 550  
Rack travel in m: 12.90...13.10  
2nd pressure hPa : 250  
Rack travel in m: 10.10...10.30  
3rd pressure hPa : 1100  
Rack travel in m: 15.30...15.50 \*  
4th pressure hPa : 1300  
Rack travel in m: 15.70...15.80 \*  
5th pressure hPa : -  
Rack travel in m: 9.00...9.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 281.0...284.0  
1000 s: (278.0...287.0)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1300  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 271.5...274.5  
1000 s: (288.5...277.5)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 205.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 15.50  
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks:  
: \* N = 700

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 27.10.93  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 648 928  
  
 Injection pump  
 Pump designation : PE8P120A320LS7847-1  
 EP type number : 0 412 628 863  
 Governor  
 Governor design. : RQ300/1050PA1030  
 Governor no. : 0 421 801 640

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.50...13.60

Del. quantity cm<sup>3</sup>/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del. quantity : 236.0...238.0

1000 : (233.0...241.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:



1st rack travel in: 11.80  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 360...400

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 13.50...13.60  
2nd speed rpm : 1050  
Rack travel in m: 12.80...13.00  
3rd speed rpm : 950  
Rack travel in m: 12.95...13.15  
4th speed rpm : 775  
Rack travel in m: 13.45...13.65

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 400  
Pressure hPa : 1200  
Rack travel mm : 13.50...13.60

#### Measurement

Speed 1/min : 400

1st pressure hPa : 650  
Rack travel in m: 12.90...13.00  
2nd pressure hPa : 300  
Rack travel in m: 11.35...11.55  
3rd pressure hPa : -  
Rack travel in m: 10.30...10.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 210.0...214.0  
1000 s: (207.0...217.0)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 650  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 196.5...199.5  
1000 s: (193.5...202.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 131.0...133.0  
1000 s: (128.0...136.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1090...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 45.0...65.0  
1000 s: (41.0...69.0)  
Rack travel in mm : 10.50...10.70

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.09.92
Replaces : 08.92
Test oil : ISO-4113
Combination no. : 0 402 648 929
Injection pump
Pump designation : PE8P120A320LS7847
EP type number : 0 412 628 863
Governor
Governor design. : RQV300...950PA1033-1
Governor no. : 0 421 813 991

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.2...5.8
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.8
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.10...1.50

2nd speed rpm : 567
travel mm : 4.40...5.00

3rd speed rpm : 780
travel mm : 6.00...6.60

4th speed rpm : 1010
travel mm : 8.50...8.70

5th speed rpm : 1190
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200  
Del.quantity : 233.0...235.0  
1000 : (230.0...238.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 118...126

Testing:  
1st rack travel in: 12.00  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 82...90

Testing:  
Speed rpm : 200  
Minimum rack trave: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION  
Speed rpm : 300...450

TORQUE CONTROL  
Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 12.90...13.10  
2nd speed rpm : 825  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 700  
Rack travel in m: 13.50...13.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.50...10.70

Measurement  
Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 11.10...11.20  
2nd pressure hPa : 650  
Rack travel in m: 12.60...12.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 214.0...218.0  
1000 s: (211.0...221.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 990...1005

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 250.0...290.0  
1000 s: (246.0...294.0)  
Rack travel in mm : 10.50...10.70

Remarks: :

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB  
 Edition : 28.10.93  
 Replaces : 26.02.93  
 Test oil : ISO-4113

Combination no. : 0 402 648 930

Injection pump  
 Pump designation : PE8P120A320LS7847  
 EP type number : 0 412 628 853  
 Governor  
 Governor design. : RQ300/1050PA1031-2  
 Governor no. : 0 421 801 645

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 290.0  
 Rated speed : 2100

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

### BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.50...13.60

Del. quantity cm<sup>3</sup>/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del. quantity : 236.0...238.0

1000 : (233.0...241.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

### RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

Testing:

Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 13.50...13.60  
2nd speed rpm : 1050  
Rack travel in m: 12.80...13.00  
3rd speed rpm : 950  
Rack travel in m: 12.95...13.15  
4th speed rpm : 775  
Rack travel in m: 13.45...43.65

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 400  
Pressure hPa : 1200  
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 400  
1st pressure hPa : 650  
Rack travel in m: 12.90...13.00  
2nd pressure hPa : 300  
Rack travel in m: 11.35...11.55  
3rd pressure hPa : -  
Rack travel in m: 10.30...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

H19

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 650  
Speed rpm : 400  
Del.quantity cm3/ : 196.5...199.5  
1000 s: (193.5...202.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 131.0...133.0  
1000 s: (128.0...136.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 250.0...290.0  
1000 s: (246.0...294.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 28.10.93
Replaces : 08.92
Test oil : ISO-4113
Combination no. : 0 402 648 931
Injection pump
Pump designation : PE8P120A320LS7847
EP type number : 0 412 628 863
Governor
Governor design. : RQ300/950PA1032-1
Governor no. : 0 421 801 646

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 105

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
(5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550
Rack travel in mm : 13.50...13.60
Del.quantity cm3/ : 23.6...23.8
100 s: (23.3...24.1)
Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.2...5.8
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.8
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1200
Del.quantity : 236.0...238.0
1000 : (233.0...241.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 360...400

#### CONSTANT REGULATION

Speed rpm : 300...450

#### TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 13.50...13.60  
2nd speed rpm : 950  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 800  
Rack travel in m: 13.50...13.60  
4th speed rpm : 875  
Rack travel in m: 13.25...13.45

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 400  
Pressure hPa : 1200  
Rack travel mm : 13.50...13.60

#### Measurement

Speed 1/min : 400  
1st pressure hPa : 650  
Rack travel in m: 12.90...13.00  
2nd pressure hPa : 300  
Rack travel in m: 11.35...11.55  
3rd pressure hPa : -  
Rack travel in m: 10.45...10.75

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

H21

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 214.0...218.0  
1000 s: (211.0...221.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 650  
Speed rpm : 400  
Del.quantity cm3/ : 196.5...199.5  
1000 s: (193.5...202.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 12.10  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 45.0...65.0  
1000 s: (41.0...69.0)  
Rack travel in mm : 10.50...10.70

Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB  
 Edition : 28.10.93  
 Replaces : 27.11.92  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 648 933  
  
 Injection pump  
 Pump designation : PE8P120A320LS7847  
 EP type number : 0 412 628 863  
 Governor  
 Governor design. : RQ300/950PA1031-3  
 Governor no. : 0 421 801 646

### Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
 Rated speed : 1900

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

### BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.50...13.60

Del. quantity cm<sup>3</sup>/ : 23.6...23.8

100 s: (23.0...23.8)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.2...5.8  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.9)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 550  
 Aneroid pressure h: 1200  
 Del. quantity : 236.0...238.0  
 1000 : (233.0...241.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (9.00)

### RATED SPEED

1st version

Setting point:  
 Speed rpm : 600



Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

Testing:

Speed rpm : 200  
Minimum rack travel: 7.90  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 13.50...13.60  
2nd speed rpm : 950  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 800  
Rack travel in m: 13.50...13.60  
4th speed rpm : 875  
Rack travel in m: 13.25...13.45

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 400  
Pressure hPa : 1200  
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 400  
1st pressure hPa : 650  
Rack travel in m: 12.90...13.00  
2nd pressure hPa : 300  
Rack travel in m: 11.35...11.55  
3rd pressure hPa : -  
Rack travel in m: 10.45...10.75

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

H23

1st version

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 214.0...218.0  
1000 s: (211.0...221.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 650  
Speed rpm : 400  
Del.quantity cm3/ : 196.5...199.5  
1000 s: (193.5...202.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB  
 Edition : 23.10.92  
 Replaces : 07.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 934  
 Injection pump  
 Pump designation : PE8P120A320LS7823  
 EP type number : 0 412 628 835  
 Governor  
 Governor design. : RQV350...1050PA866-  
 -21  
 Governor no. : 0 421 813 996

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm<sup>3</sup>/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.0...5.6  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 350  
 travel mm : 1.40...1.60

2nd speed rpm : 800  
 travel mm : 4.70...5.10

3rd speed rpm : 1100  
 travel mm : 7.60...8.20

4th speed rpm : 1175  
 travel mm : 9.20...9.80

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1

Speed rpm : 1150  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 234.0...237.0  
1000 : (231.0...240.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 13.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 62...70

Testing:  
Speed rpm : 250  
Minimum rack trave: 7.10  
Speed rpm : 350  
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION  
Speed rpm : 350...550

TORQUE CONTROL  
Dimension a mm : 0.50  
2nd speed rpm : 1050  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 800  
Rack travel in m: 15.20...15.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.60...13.80

Measurement  
Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 500  
Rack travel in m: 12.80...13.00  
3rd pressure hPa : 1050

Rack travel in m: 13.70...13.90 \*  
4th pressure hPa : 1250  
Rack travel in m: 14.50...14.70  
5th pressure hPa : -  
Rack travel in m: 10.10...10.40

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1600  
Speed rpm : 1050  
Del.quantity cm3/ : 252.0...256.0  
1000 s: (249.0...259.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm3/ : 270.0...274.0  
1000 s: (267.0...277.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 1050  
Del.quantity cm3/ : 184.0...187.0\*\*  
1000 s: (181.0...190.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:  
:

\*\* = Set at reduced-delivery stop.

\* Increase in control-rod travel with respect to setting at least 0.1 mm



## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB  
 Edition : 28.10.93  
 Replaces : 11.01.93  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 648 940  
  
 Injection pump  
 Pump designation : PE8P120A320LS7847  
 EP type number : 0 412 628 863  
 Governor  
 Governor design. : RQ300/950PA1032-4  
 Governor no. : 0 421 801 661

### Customer spec. information

Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
 Rated speed : 1900

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

### BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del. quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

### RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 13.20...13.30  
2nd speed rpm : 950  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 825  
Rack travel in m: 13.20...13.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 400  
Pressure hPa : 1200  
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 400  
1st pressure hPa : 650  
Rack travel in m: 12.90...13.00  
2nd pressure hPa : 300  
Rack travel in m: 11.35...11.55  
3rd pressure hPa : -  
Rack travel in m: 10.45...10.75

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 950

Del.quantity cm<sup>3</sup>/ : 214.0...218.0  
1000 s: (211.0...221.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 650  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 196.5...199.5  
1000 s: (193.5...202.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 45.0...75.0  
1000 s: (41.0...79.0)  
Rack travel in mm : 10.40...10.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 28.10.93  
 Replaces : 11.01.93  
 Test oil : ISO-4113

Combination no. : 0 402 648 941

Injection pump  
 Pump designation : PE8P120A320LS7847  
 EP type number : 0 412 628 863  
 Governor  
 Governor design. : RQV300...950PA1033-7  
 Governor no. : 0 421 814 019

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 95...115

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)

Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

---

Rack travel in mm : 13.20...13.30

---

Del. quantity cm<sup>3</sup>/ : 22.5...22.7  
 100 s: (22.2...23.0)

---

Spread cm<sup>3</sup> : 0.6  
 100 s: (0.9)

---

2nd speed rpm : 300.0  
 Rack travel in mm : 5.2...5.8  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.9)

---

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.10...1.50

2nd speed rpm : 567  
 travel mm : 4.40...5.00

3rd speed rpm : 780  
 travel mm : 6.00...6.60

4th speed rpm : 1010  
 travel mm : 8.40...8.70

5th speed rpm : 1190  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1050  
 Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 550  
Aneroid pressure h: 1200  
Del. quantity : 225.0...227.0  
1000 : (222.0...230.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 12.00  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 82...90

Testing:  
Speed rpm : 200  
Minimum rack travel: 9.00  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60

#### CONSTANT REGULATION

Speed rpm : 300...390

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 13.20...13.30  
2nd speed rpm : 950  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 825  
Rack travel in m: 13.20...13.30

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 400  
Pressure hPa : 1200  
Rack travel mm : 13.20...13.30

#### Measurement

Speed 1/min : 400

1st pressure hPa : 650

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Rack travel in m: 12.90...13.00  
2nd pressure hPa : 300  
Rack travel in m: 11.35...11.55  
3rd pressure hPa : -  
Rack travel in m: 10.45...10.75

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 214.0...218.0  
1000 s: (211.0...221.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 650  
Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 196.5...199.5  
1000 s: (193.5...202.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 275.0...295.0  
1000 s: (271.0...299.0)

Remarks:

:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 28.10.93
Replaces : 11.01.93
Test oil : ISO-4113
Combination no. : 0 402 648 942
Injection pump
Pump designation : PE8P120A320LS7847
EP type number : C 412 628 863
Governor
Governor design. : RQ300/950PA1031-6
Governor no. : 0 421 801 662

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 825  
Rack travel in m: 13.20...13.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 550  
Pressure hPa : 1200  
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 400  
1st pressure hPa : 650  
Rack travel in m: 12.90...13.00  
2nd pressure hPa : 300  
Rack travel in m: 11.35...11.55  
3rd pressure hPa : -  
Rack travel in m: 10.45...10.75

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 214.0...218.0  
1000 s: (211.0...221.0)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 650  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 196.5...199.5  
1000 s: (193.5...202.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 28.10.93  
 Replaces : 11.01.93  
 Test oil : ISO-4113

Combination no. : 0 402 648 945

Injection pump  
 Pump designation : PE8P120A320LS7847  
 EP type number : 0 412 628 863  
 Governor  
 Governor design. : RQ300/1050PA1030-6  
 Governor no. : 0 421 801 666

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 683 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del. quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.60  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

Testing:

Speed rpm : 200  
Minimum rack travel: 7.30  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 355...395

TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 13.20...13.30  
2nd speed rpm : 1050  
Rack travel in m: 12.80...13.00  
3rd speed rpm : 950  
Rack travel in m: 12.95...13.15  
4th speed rpm : 800  
Rack travel in m: 13.20...13.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 400  
Pressure hPa : 1200  
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 400  
1st pressure hPa : 650  
Rack travel in m: 12.90...13.00  
2nd pressure hPa : 300  
Rack travel in m: 11.35...11.55  
3rd pressure hPa : -  
Rack travel in m: 10.30...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 1050  
Del.quantity cm3/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 650  
Speed rpm : 400  
Del.quantity cm3/ : 196.5...199.5  
1000 s: (193.5...202.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 131.0...133.0  
1000 s: (128.0...136.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 45.0...75.0  
1000 s: (41.0...79.0)  
Rack travel in mm : 9.90...10.30

Remarks:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB  
 Edition : 28.10.93  
 Replaces : 11.01.93  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 648 946  
  
 Injection pump  
 Pump designation : PE8P120A320LS7847  
 EP type number : 0 412 628 863  
 Governor  
 Governor design. : RQ300/1050PA1031-7  
 Governor no. : 0 421 801 667

### Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0  
 Rated speed : 2100

### TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow quantity min. 1/h: 100...120

Test nozzle holder assembly : 1 688 901 105

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 : 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

### BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del. quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

### RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 13.00  
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.5

Testing:

Speed rpm : 200  
Minimum rack travel: 7.40  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 365...405

TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 13.20...13.30  
2nd speed rpm : 1050  
Rack travel in m: 12.80...13.00  
3rd speed rpm : 950  
Rack travel in m: 12.95...13.15  
4th speed rpm : 800  
Rack travel in m: 13.00...13.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 400  
Pressure hPa : 1200  
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 400  
1st pressure hPa : 650  
Rack travel in m: 12.90...13.00  
2nd pressure hPa : 300  
Rack travel in m: 11.35...11.55  
3rd pressure hPa : -  
Rack travel in m: 10.03...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

J08

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 650  
Speed rpm : 400  
Del.quantity cm3/ : 196.5...199.5  
1000 s: (193.5...202.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 131.0...133.0  
1000 s: (128.0...136.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 275.0...295.0  
1000 s: (271.0...299.0)

Remarks:

:

APPLICATION

Omnibus

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB  
 Edition : 21.10.1993  
 Replaces : 11.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 947  
 Injection pump  
 Pump designation : PE8P120A320LS7859  
 EP type number : 0 412 628 869  
 Governor  
 Governor design. : RQ300/950PA1032-5  
 Governor no. : 0 421 801 668

### Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 1900

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

### BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.60...13.70

Del. quantity cm<sup>3</sup>/ : 24.1...24.3

100 s: (23.8...24.6)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.9...5.5

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aeroid pressure h: 1000

Del. quantity : 241.0...243.0

1000 : (238.0...246.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

### RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.65

Speed rpm : 990...1006

2nd rack travel in: 4.00

Speed rpm : 1065...1095

4th rack travel in: 1200

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.20

Testing:

Speed rpm : 200

Minimum rack travel: 8.00

Speed rpm : 300

Rack travel in mm : 5.10...5.30

Rack travel in mm : 2.00

Speed rpm : 360...400

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 550

Pressure hPa : 1000

Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 400

1st pressure hPa : 550

Rack travel in m: 12.50...12.60

2nd pressure hPa : 250

Rack travel in m: 10.40...10.60

3rd pressure hPa : -

Rack travel in m: 9.40...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 950

Del.quantity cm<sup>3</sup>/ : 230.0...234.0

1000 s: (228.0...236.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.0)

Aneroid pressure h: 550

Speed rpm : 400

Del.quantity cm<sup>3</sup>/ : 203.0...206.0

1000 s: (200.0...209.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 132.0...134.0

1000 s: (129.0...137.0)

Spread

cm<sup>3</sup> : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.65

Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 65.0...95.0.0

1000 s: (61.0...99.0)

Rack travel in mm : 9.40...9.80

Remarks:

: \* N = 400 1/MIN

: \*\*N = 500 1/MIN



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 28.10.93  
 Replaces : 27.11.92  
 Test oil : ISO-4113

Combination no. : 0 402 648 948

Injection pump  
 Pump designation : PE8P120A320LS7859  
 EP type number : 0 412 628 869  
 Governor  
 Governor design. : RQ300/1050PA1030-7  
 Governor no. : 0 421 801 669

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.60...13.70

Del. quantity cm<sup>3</sup>/ : 24.1...24.3

100 s: (23.8...24.6)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1000

Del. quantity : 241.0...243.0

1000 : (238.0...246.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.40  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 13.60...16.70  
2nd speed rpm : 1050  
Rack travel in m: 13.30...13.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 550  
Pressure hPa : 1000  
Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 400  
1st pressure hPa : 550  
Rack travel in m: 12.50...12.60  
2nd pressure hPa : 250  
Rack travel in m: 10.40...10.60  
3rd pressure hPa : -  
Rack travel in m: 9.40...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 222.0...226.0  
1000 s: (219.0...229.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.40  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 65.0...95.0  
1000 s: (61.0...99.0)  
Rack travel in mm : 9.40...9.80

Remarks: :

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB  
 Edition : 24.9.1993  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 648 949

Injection pump  
 Pump designation : PE8P120A320LS7883  
 EP type number : 0 412 623 874  
 Governor  
 Governor design. : RGV300...950PA1050K  
 Governor no. : 0 421 815 333

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
 Rated speed : 1900

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 14.00...15.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance ± - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BEGINNING OF DELIVERY DIFFERENCE**

betw. rack trav. m: 5.90...6.10  
 & maximum rack tra: 14.0...15.0  
 Difference ° CS : 3.75...5.25

**BASIC SETTING**

1st speed rpm : 950

Rack travel in mm : 14.40...14.50

Del. quantity cm<sup>3</sup>/ : 26.8...27.0

100 s: (26.5...27.3)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300  
 Rack travel in mm : 5.5...6.1  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.53...1.73  
 2nd speed rpm : 520  
 travel mm : 3.55...4.05  
 3rd speed rpm : 810  
 travel mm : 5.15...5.65  
 4th speed rpm : 1006  
 travel mm : 7.40...7.60  
 5th speed rpm : 1280  
 travel mm : 13.00...14.00

**GUIDE SLEEVE POSITION**

Control-lever position  
Degree: -1  
Speed rpm : 1160  
Rack travel in mm : 12.20...14.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 950  
Aneroid pressure h: 1200  
Del. quantity : 268.0...270.0  
1000 : (265.0...273.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 109...117

Testing:  
1st rack travel in: 13.40  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1080...1100  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70...78

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION  
Speed rpm : 300...500

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 14.40...14.50  
2nd speed rpm : 750  
Rack travel in m: 14.15...14.25  
3rd speed rpm : 700  
Rack travel in m: 13.80...14.00  
4th speed rpm : 650  
Rack travel in m: 13.60...13.80  
5th speed rpm : 550  
Rack travel in m: 13.40...13.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 850  
Pressure hPa : 1200  
Rack travel mm : 14.50...14.70

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 12.35...12.45  
2nd pressure hPa : 150  
Rack travel in m: 12.60...12.80  
3rd pressure hPa : --  
Rack travel in m: 7.80...8.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 550  
Del. quantity cm<sup>3</sup>/ : 253.0...259.0  
1000 s: (250.0...262.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.40  
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 120.0...140.0  
1000 s: (116.0...144.0)

Remarks:  
:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB  
 Edition : 28.10.93  
 Replaces : 18.12.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 953  
 Injection pump  
 Pump designation : PE8P120A320LS7859  
 EP type number : 0 412 628 869  
 Governor  
 Governor design. : RQV300...950PA1033  
 -10  
 Governor no. : 0 421 814 040

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 1900

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 550

Rack travel in mm : 13.60...13.70

Del. quantity cm<sup>3</sup>/ : 24.1...24.3

100 s: (23.8...24.6)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.5

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.00...1.50

2nd speed rpm : 567  
 travel mm : 4.40...4.90

3rd speed rpm : 617  
 travel mm : 5.00...5.50

4th speed rpm : 780  
 travel mm : 6.10...6.60

5th speed rpm : 1009  
 travel mm : 8.40...8.70

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 11.30...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550  
Aneroid pressure h: 1000  
Del.quantity : 241.0...243.0  
1000 : (238.0...246.0)  
Spread cm3 : 6.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 117...125

Testing:

1st rack travel in: 12.65  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 82...90

Testing:

Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 380...420

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 550  
Pressure hPa : 1000  
Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 12.50...12.60  
2nd pressure hPa : 250  
Rack travel in m: 10.40...10.60  
3rd pressure hPa : -  
Rack travel in m: 9.40...9.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 950  
Del.quantity cm3/ : 230.0...234.0  
1000 s: (227.0...237.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.65  
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB  
 Edition : 29.10.93  
 Replaces : 3.12.92  
 Test oil : ISO-4113

Combination no. : 0 402 648 954

Injection pump  
 Pump designation : PE8P120A320LS7859  
 EP type number : 0 412 628 869  
 Governor  
 Governor design. : RQ300/1050PA1031-8  
 Governor no. : 0 421 801 674

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 550

---

Rack travel in mm : 13.60...13.70

---

Del. quantity cm<sup>3</sup>/ : 24.1...24.3  
 100 s: (23.8...24.6)

---

Spread cm<sup>3</sup> : 0.6  
 100 s: (0.9)

---

2nd speed rpm : 300.0  
 Rack travel in mm : 4.9...5.5  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 550  
 Aneroid pressure h: 1000  
 Del. quantity : 241.0...243.0  
 1000 : (238.0...246.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
 Setting point:  
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.40  
Speed rpm : 1090...1106  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.40  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 550  
Rack travel in m: 13.60...16.70  
2nd speed rpm : 1050  
Rack travel in m: 13.30...13.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 550  
Pressure hPa : 1000  
Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 400  
1st pressure hPa : 550  
Rack travel in m: 12.50...12.60  
2nd pressure hPa : 250  
Rack travel in m: 10.40...10.60  
3rd pressure hPa : -  
Rack travel in m: 9.40...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 222.0...226.0  
1000 s: (219.0...229.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.40  
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 250.0...270.0  
1000 s: (246.0...274.0)

Remarks:

:



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB  
 Edition : 29.10.93  
 Replaces : 18.12.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 955  
 Injection pump  
 Pump designation : PE8P120A320LS7859  
 EP type number : 0 412 628 869  
 Governor  
 Governor design. : RQ300/950PA1031-9  
 Governor no. : 0 421 801 675

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 1900

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke nm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 550  
 Rack travel in mm : 13.60...13.70  
 Del.quantity cm<sup>3</sup>/ : 24.1...24.3  
 100 s: (23.8...24.6)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.9...5.5  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 550  
 Aneroid pressure h: 1000  
 Del.quantity : 241.0...243.0  
 1000 : (238.0...246.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.65  
Speed rpm : 990...1006  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.60...13.70

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 12.50...12.60  
2nd pressure hPa : 250  
Rack travel in m: 10.40...10.60  
3rd pressure hPa : -  
Rack travel in m: 9.40...9.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 950  
Del.quantity cm3/ : 230.0...234.0  
1000 s: (227.0...237.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.65  
Speed rpm : 990...1006

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 250.0...270.0  
1000 s: (246.0...274.0)

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 29.10.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 956  
 Injection pump  
 Pump designation : PE8P120A320LS7863  
 EP type number : 0 412 628 874  
 Governor  
 Governor design. : RQV300...1050PA1050-1K  
 Governor no. : 0 421 815 339

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow quantity min. 1/h: 100...120

Test nozzle holder assembly : 1 688 901 105

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 14.00...15.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 25.7...25.9

100 s: (25.4...26.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.50...6.10

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.75...1.95

2nd speed rpm : 347  
 travel mm : 2.47...2.97

3rd speed rpm : 397  
 travel mm : 3.01...3.51

4th speed rpm : 850  
 travel mm : 5.35...5.85

5th speed rpm : 1106  
 travel mm : 8.86...9.06

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure h: 1200  
Del.quantity : 257.0...259.0  
1000 : (254.0...262.0)  
Spread cm3 : 6.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 115...123

Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever position degrees: 71...79

Testing:

Speed rpm : 200  
Minimum rack trave: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

Speed rpm : 310...490

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 950  
Rack travel in m: 14.35...14.55  
3rd speed rpm : 750  
Rack travel in m: 14.15...14.25  
4th speed rpm : 650  
Rack travel in m: 13.60...13.80  
5th speed rpm : 550  
Rack travel in m: 13.35...13.65

Aneroid/Altitude Compensator Test

1st version

Setting  
Speed rpm : 850  
Pressure hPa : 1200  
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 400  
1st pressure hPa : 550  
Rack travel in m: 12.35...12.45  
2nd pressure hPa : 150  
Rack travel in m: 8.80...9.00  
3rd pressure hPa : -  
Rack travel in m: 7.80...8.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 260.0...264.0  
1000 s: (257.0...267.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 550  
Del.quantity cm3/ : 253.0...259.0  
1000 s: (250.0...262.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...140.0  
1000 s: (116.0...144.0)  
Rack travel in mm : 11.20...12.00

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 29.10.93
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 648 957
Injection pump
Pump designation : PE8P120A320LS7863
EP type number : 0 412 628 874
Governor
Governor design. : RQV300...950PA1056K
Governor no. : 0 421 815 340

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kw : 370.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 14.00...15.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 26.8...27.0

100 s: (26.5...27.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.50...6.10

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.53...1.73

2nd speed rpm : 361

travel mm : 2.56...3.06

3rd speed rpm : 411

travel mm : 3.16...3.66

4th speed rpm : 810

travel mm : 5.14...5.64

5th speed rpm : 1006

travel mm : 7.40...7.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 12.30...14.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 950  
Aneroid pressure h: 1200  
Del.quantity : 268.0...270.0  
1000 : (265.0...273.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 107...115

Testing:  
1st rack travel in: 13.40  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 70...78

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION  
Speed rpm : 300...500

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 14.40...14.50  
2nd speed rpm : 850  
Rack travel in m: 14.50...14.70  
3rd speed rpm : 750  
Rack travel in m: 14.15...14.25  
4th speed rpm : 650  
Rack travel in m: 13.60...13.80  
5th speed rpm : 550  
Rack travel in m: 13.40...13.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 850  
Pressure hPa : 1200  
Rack travel mm : 14.60...14.80

Measurement  
Speed 1/min : 400

1st pressure hPa : 550  
Rack travel in m: 12.35...12.45  
2nd pressure hPa : 150  
Rack travel in m: 8.80...9.00  
3rd pressure hPa : -  
Rack travel in m: 7.80...8.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 260.0...264.0  
1000 s: (257.0...267.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 253.0...259.0  
1000 s: (250.0...262.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.40  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...140.0  
1000 s: (116.0...144.0)  
Rack travel in mm : 11.20...12.00

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 29.10.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 958  
 Injection pump  
 Pump designation : PE8P120A320LS7863  
 EP type number : 0 412 628 874  
 Governor  
 Governor design. : RQV300...1050PA1056-1K  
 Governor no. : 0 421 815 339

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 14.00...15.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 25.7...25.9

100 s: (25.4...26.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.50...6.10

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.75...1.95

2nd speed rpm : 347  
 travel mm : 2.47...2.97

3rd speed rpm : 397  
 travel mm : 3.01...3.51

4th speed rpm : 850  
 travel mm : 5.35...5.85

5th speed rpm : 1106  
 travel mm : 8.86...9.06

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure h: 1200  
Del.quantity : 257.0...259.0  
1000 : (254.0...262.0)  
Spread cm3 : 6.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 115...123

Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 71...79

Testing:

Speed rpm : 200  
Minimum rack trave: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 950  
Rack travel in m: 14.35...14.55  
3rd speed rpm : 750  
Rack travel in m: 14.15...14.25  
4th speed rpm : 650  
Rack travel in m: 13.60...13.80  
5th speed rpm : 550  
Rack travel in m: 13.40...13.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 850  
Pressure hPa : 1200  
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 400  
1st pressure hPa : 550  
Rack travel in m: 12.35...12.45  
2nd pressure hPa : 150  
Rack travel in m: 8.80...9.00  
3rd pressure hPa : -  
Rack travel in m: 7.80...8.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 260.0...264.0  
1000 s: (257.0...267.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 550  
Del.quantity cm3/ : 253.0...259.0  
1000 s: (250.0...262.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 550  
Speed rpm : 400  
Del.quantity cm3/ : 203.0...206.0  
1000 s: (200.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...140.0  
1000 s: (116.0...144.0)  
Rack travel in mm : 11.20...12.00

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 649 801  
 Injection pump  
 Pump designation : PE10P120A320LS7809  
 -11  
 EP type number : 0 412 629 807  
 Governor  
 Governor design. : RQ300/1050PA717-1  
 Governor no. : 0 421 801 396

Customer spec. information  
 Customer : DAIMLER-BENZ

Engine : OM443 LA

1st version kW : 401.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 130...150

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 10- 9- 4- 1- 8- 7-  
 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del. quantity cm<sup>3</sup>/ : 21.9...22.1

100 s: (21.6...22.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del. quantity : 219.0...221.0

1000 : (216.0...224.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.20  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

Testing:

Speed rpm : 100  
Minimum rack travel: 8.30  
Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 800  
Rack travel in m: 15.50...15.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600  
1st pressure hPa : 400  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 600  
Rack travel in m: 13.60...13.80  
3rd pressure hPa : 960  
Rack travel in m: 14.80...14.90 \*  
4th pressure hPa : 1100  
Rack travel in m: 15.20...15.40  
5th pressure hPa : -  
Rack travel in m: 11.20...11.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

K03

1st version

Aneroid pressure h: 1300  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 229.0...232.0  
1000 s: (226.0...235.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1300  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 234.0...238.0  
1000 s: (231.0...241.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 133.0...135.0  
1000 s: (130.0...138.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 14.20  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 230.0...250.0  
1000 s: (226.0...254.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 649 803

Injection pump  
 Pump designation : PE10P120A320LS7809  
 -11  
 EP type number : 0 412 629 807  
 Governor  
 Governor design. : RGV300...1050PA797-4  
 Governor no. : 0 421 813 654

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM443 LA

1st version kW : 401.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 130...150

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 10- 9- 4- 1- 8- 7-  
 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del. quantity cm<sup>3</sup>/ : 21.9...22.1

100 s: (21.6...22.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.6...6.8  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.20...1.40  
 2nd speed rpm : 600  
 travel mm : 4.90...5.10  
 3rd speed rpm : 800  
 travel mm : 5.80...6.10  
 4th speed rpm : 1075  
 travel mm : 7.40...7.70  
 5th speed rpm : 1150  
 travel mm : 8.00...8.80

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1100  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 900  
Del. quantity : 219.0...221.0  
1000 : (216.0...224.0)  
Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 124...116

Testing:

1st rack travel in: 14.10  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 81...89

Testing:

Speed rpm : 200  
Minimum rack trave: 8.60  
Speed rpm : 300  
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

Speed rpm : 300...400

TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 15.10...15.30  
3rd speed rpm : 800  
Rack travel in m: 15.50...15.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600  
1st pressure hPa : 400  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 600

Rack travel in m: 13.60...13.80  
3rd pressure hPa : 960  
Rack travel in m: 14.80...14.90 \*  
4th pressure hPa : 1100  
Rack travel in m: 15.20...15.40  
5th pressure hPa : -  
Rack travel in m: 11.20...11.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300  
Speed rpm : 1050  
Del. quantity cm3/ : 229.0...232.0  
1000 s: (226.0...235.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1300  
Speed rpm : 800  
Del. quantity cm3/ : 234.0...238.0  
1000 s: (231.0...241.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm3/ : 133.0...135.0  
1000 s: (130.0...138.0)  
Spread cm3 : 8.00  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 14.10  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 230.0...250.0  
1000 s: (226.0...254.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 649 804  
 Injection pump  
 Pump designation : PE10P120A320LS7809  
 -11  
 EP type number : 0 412 629 807  
 Governor  
 Governor design. : RQV300...1050PA797-6  
 Governor no. : 0 421 813 705

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM443 A

1st version kW : 331.0  
 Rated speed : 2100

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 130...150

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

### BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 10- 9- 4- 1- 8- 7-  
 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

### BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.30...13.40

Del. quantity cm<sup>3</sup>/ : 18.7...19.0

100 s: (18.4...19.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...6.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.20...1.40

2nd speed rpm : 600  
travel mm : 4.90...5.20

3rd speed rpm : 800  
travel mm : 5.80...6.20

4th speed rpm : 1025  
travel mm : 8.50...9.00

5th speed rpm : 1175  
travel mm : 9.50...10.10

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure h: 900  
Del.quantity : 187.0...190.0  
1000 : (184.0...193.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 117...125

Testing:

1st rack travel in: 12.30  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 83...91

Testing:

Speed rpm : 200  
Minimum rack trave: 8.60  
Speed rpm : 300  
Rack travel in mm : 6.50...6.80

CONSTANT REGULATION

Speed rpm : 300...400

TORQUE CONTROL

Dimension a mm : 0.90  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.30...13.40  
2nd speed rpm : 750  
Rack travel in m: 14.20...14.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.50...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 12.10...12.30

2nd pressure hPa : 550  
Rack travel in m: 13.50...13.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 198.0...202.0  
1000 s: (195.0...205.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 131.0...133.0  
1000 s: (128.0...136.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 649 805  
  
Injection pump  
Pump designation : PE10P120A320LS7817  
-10  
EP type number : 0 412 629 808  
Governor  
Governor design. : RQ300/1250PA856-1  
Governor no. : 0 421 801 449

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM443 LA

1st version kw : 400.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 130...150

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 20.00...21.00  
Firing order : 10- 9- 4- 1- 8- 7-  
6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
216-261-288-353

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.50...15.70

Del. quantity cm<sup>3</sup>/ : 22.4...22.6

100 s: (22.1...22.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1050

Del. quantity : 224.0...226.0

1000 : (221.0...229.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.40  
Speed rpm : 1295...1310  
2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
4th rack travel in: 1500  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

Testing:

Speed rpm : 200  
Minimum rack travel: 8.10  
Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 390...420

TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 1250  
Rack travel in m: 15.40...15.60  
3rd speed rpm : 800  
Rack travel in m: 16.10...16.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1050  
Rack travel mm : 16.10...16.30

Measurement

Speed 1/min : 600  
1st pressure hPa : 400  
Rack travel in m: 13.20...13.40  
2nd pressure hPa : 750  
Rack travel in m: 15.20...15.40  
3rd pressure hPa : 1250  
Rack travel in m: 16.20...16.40 \*  
4th pressure hPa : 1500  
Rack travel in m: 16.60...16.80  
5th pressure hPa : -  
Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

K09

1st version

Aneroid pressure h: 1500  
Speed rpm : 1250  
Del.quantity cm3/ : 222.0...226.0  
1000 s: (219.0...229.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: 1500  
Speed rpm : 800  
Del.quantity cm3/ : 235.0...239.0  
1000 s: (232.0...242.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 129.0...131.0  
1000 s: (126.0...134.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 14.40  
Speed rpm : 1295...1310

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 230.0...250.0  
1000 s: (226.0...254.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 649 808  
 Injection pump  
 Pump designation : PE10P120A320LS7809  
 -11  
 EP type number : 0 412 629 807  
 Governor  
 Governor design. : RQ300/1050PA762-6  
 Governor no. : 0 421 801 471

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM443 A

1st version kw : 331.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 130...150

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 10- 9- 4- 1- 8- 7-  
 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
 216-261-288-333

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.30...13.40

Del. quantity cm<sup>3</sup>/ : 18.5...18.7

100 s: (18.2...19.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del. quantity : 185.0...187.0

1000 : (182.0...190.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.30  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.1

Testing:

Speed rpm : 200  
Minimum rack travel: 9.20  
Speed rpm : 300  
Rack travel in mm : 6.80...7.40  
Rack travel in mm : 2.00  
Speed rpm : 395...435

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.30...13.40  
2nd speed rpm : 750  
Rack travel in m: 14.70...15.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.30...11.60

Measurement

Speed 1/min : 500  
1st pressure hPa : 300  
Rack travel in m: 11.90...12.10  
2nd pressure hPa : 550  
Rack travel in m: 13.40...13.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 750

Del.quantity cm3/ : 202.0...205.0  
1000 s: (199.0...208.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 129.0...131.0  
1000 s: (126.0...134.0)  
Spread cm3 : 8.00  
1000 s: (-)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 g11  
 Edition : 31.07.92  
 Replaces : 05.91  
 Test oil : ISO-4113

Combination no. : 0 402 678 815

Injection pump  
 Pump designation : PE8P120A320LS7801-1  
 EP type number : 0 412 628 818  
 Governor  
 Governor design. : RSV650...1200POA826  
 -1  
 Governor no. : 0 421 833 357

Customer spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442A

1st version kW : 245.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 17.0...17.2

100 s: (16.7...17.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 650.0

Rack travel in mm : 4.0...4.6

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del. quantity : 170.0...172.0

1000 : (167.0...175.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 92...100

Testing:  
1st rack travel in: 11.20  
Speed rpm : 1215...1225  
2nd rack travel in: 4.00  
Speed rpm : 1249...1267  
4th rack travel in: 1500  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 71...79  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 4.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 650  
Rack travel in mm : 4.00...4.60  
Rack travel in mm : 2.00  
Speed rpm : 660...720

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 1000  
Rack travel in m: 12.40...12.60  
3rd speed rpm : 900  
Rack travel in m: 12.80...13.00  
4th speed rpm : 600  
Rack travel in m: 13.50...13.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 184.0...187.0  
1000 s: (181.0...190.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 195.0...199.0  
1000 s: (192.0...202.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 1215...1225

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...190.0  
1000 s: (166.0...194.0)

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 23.10.91  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 736 803  
  
Injection pump  
Pump designation : PES6P110A120RS7187  
EP type number : 0 412 716 801  
Governor  
Governor design. : RQV350...1100PA924  
-3K  
Governor no. : 0 421 815 228

Customer-spec. information  
Customer : CDC

Engine : 6CTA

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 33...42

Overflow valve  
: 2 417 413 047

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 4.35...4.45  
: (4.30...4.50)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.40...10.50

Del. quantity cm<sup>3</sup>/ : 13.7...13.9

100 s: (13.4...14.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.6...4.8

Del. quantity cm<sup>3</sup>/ : 3.0...3.6

100 s: (2.8...3.8)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.10...1.50

2nd speed rpm : 550

travel mm : 3.70...4.30

3rd speed rpm : 900

travel mm : 6.90...7.50

4th speed rpm : 1150

travel mm : 9.70...9.90

5th speed rpm : 1250

travel mm : 11.00...11.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1230

Rack travel in mm : 6.00...12.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 137.0...139.0  
1000 : (134.0...142.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

#### Testing:

1st rack travel in: 9.40  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19  
Speed rpm : 350  
Rack travel in mm : 4.60...4.80

#### CONSTANT REGULATION

Speed rpm : 350...450

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 900  
Rack travel in m: 10.10...10.30  
3rd speed rpm : 650  
Rack travel in m: 0.00...9.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1100  
Pressure hPa : 900  
Rack travel mm : 10.40...10.50

#### Measurement

Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 6.70...7.10  
2nd pressure hPa : 200  
Rack travel in m: 7.40...7.50  
3rd pressure hPa : 330  
Rack travel in m: 8.40...8.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 86.0...90.0  
1000 s: (84.0...92.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.40  
Speed rpm : 1140...1150

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.60...4.80  
Del.quantity cm<sup>3</sup>/ : 30.0...36.0  
1000 s: (28.0...38.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Bow dimension:  
Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 r  
 Edition : 02.07.93  
 Replaces : 06.93  
 Test oil : ISO-4113

Combination no. : 0 402 736 807

Injection pump  
 Pump designation : PES6P110A12ORS7214  
 EP type number : 0 412 716 805  
 Governor  
 Governor design. : RQV350...1100PA964  
 -1K  
 Governor no. : 0 421 815 253

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 201.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 115...125

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
 : (4.30...4.50)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 15.80...15.90

Del.quantity cm<sup>3</sup>/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 2.7...3.3

100 s: (2.5...3.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.80...2.00

2nd speed rpm : 450  
 travel mm : 3.10...3.50

3rd speed rpm : 600  
 travel mm : 5.10...5.50

4th speed rpm : 1000  
 travel mm : 8.10...8.30

5th speed rpm : 1200  
 travel mm : 9.60...10.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure h: 1500  
Del.quantity : 209.0...211.0  
1000 : (206.0...214.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 64...72

Testing:  
1st rack travel in: 14.50  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1300...1330  
4th rack travel in: 14.00  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 15.80...15.90  
2nd speed rpm : 650  
Rack travel in m: 13.20...13.60  
3rd speed rpm : 1100  
Rack travel in m: 15.50...15.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1050  
Pressure hPa : 1500  
Rack travel mm : 15.80...15.90

Measurement  
Speed 1/min : 1050

1st pressure hPa : -  
Rack travel in m: 8.10...8.50  
2nd pressure hPa : 335

Rack travel in m: 10.10...10.20  
3rd pressure hPa : 845  
Rack travel in m: 13.60...14.00

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 190.5...196.5  
1000 s: (187.5...199.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 91.0...95.0  
1000 s: (89.0...97.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.50  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 11.00...12.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 27.0...33.0  
1000 s: (25.0...35.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:  
: C.D.C. # 3921771

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:  
Sliding-sleeve position = 37.0 mm



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : CUM 8,3 r 1  
 Edition : 02.07.93  
 Replaces : 06.93  
 Test oil : ISO-4113

Combination no. : 0 402 736 814

Injection pump  
 Pump designation : PES6P110A12ORS7214  
 EP type number : 0 412 716 805  
 Governor  
 Governor design. : RQV350...1200PA964  
 -6K  
 Governor no. : 0 421 815 258

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 187.0  
 Rated speed : 2400

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 115...125

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
 : (4.30...4.50)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1200

---

Rack travel in mm : 14.50...14.60

---

Del. quantity cm<sup>3</sup>/ : 18.3...18.5  
 100 s: (18.0...18.8)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

---

2nd speed rpm : 350.0  
 Rack travel in mm : 5.4...5.6  
 Del. quantity cm<sup>3</sup>/ : 2.7...3.3  
 100 s: (2.5...3.5)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 350  
 travel mm : 1.80...2.00

2nd speed rpm : 450  
 travel mm : 3.10...3.50

3rd speed rpm : 700  
 travel mm : 5.90...6.30

4th speed rpm : 1200  
 travel mm : 9.00...9.20

5th speed rpm : 1400  
 travel mm : 10.70...11.10

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 1200  
 Del. quantity : 183.0...185.0  
 1000 : (180.0...188.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 62...70

Testing:

1st rack travel in: 13.50  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1405...1435  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:

Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version:  
1st speed rpm : 1200  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 650  
Rack travel in m: 11.40...11.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1200  
Pressure hPa : 1200  
Rack travel mm : 14.50...14.60

Measurement

Speed 1/min : 1200  
1st pressure hPa : -  
Rack travel in m: 7.50...7.90  
2nd pressure hPa : 320  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 860  
Rack travel in m: 13.30...13.70

START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm3/ : 165.5...171.5  
1000 s: (162.5...174.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 86.5...90.5  
1000 s: (84.5...92.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.50  
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 10.70...11.70

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 27.0...33.0  
1000 s: (25.0...35.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: C.D.C. # 3921775

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 2  
 Edition : 15.08.93  
 Replaces : 12.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 816  
 Injection pump  
 Pump designation : PES6P110A12ORS7214  
 EP type number : 0 412 716 805  
 Governor  
 Governor design. : RQV350...1200PA964  
 -8K  
 Governor no. : 0 421 815 264

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 213.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 115...125

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
 : (4.30...4.50)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.70...14.80

Del. quantity cm<sup>3</sup>/ : 19.1...19.3

100 s: (18.8...19.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.3

Del. quantity cm<sup>3</sup>/ : 2.7...3.3

100 s: (2.5...3.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.80...2.00

2nd speed rpm : 450  
 travel mm : 3.00...3.40

3rd speed rpm : 700  
 travel mm : 5.90...6.30

4th speed rpm : 1200  
 travel mm : 9.00...9.20

5th speed rpm : 1400  
 travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 1200  
 Del. quantity : 191.5...193.5  
 1000 : (188.5...196.5)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 62...70

#### Testing:

1st rack travel in: 13.20  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

#### Testing:

Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.70...14.80  
2nd speed rpm : 650  
Rack travel in m: 12.60...13.00  
3rd speed rpm : 1200  
Rack travel in m: 14.20...14.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1100  
Pressure hPa : 1200  
Rack travel mm : 14.70...14.80

#### Measurement

Speed 1/min : 1100  
1st pressure hPa : -  
Rack travel in m: 7.80...8.20  
2nd pressure hPa : 335  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 785  
Rack travel in m: 12.80...13.20

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 181.0...187.0  
1000 s: (178.0...190.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 90.0...94.0  
1000 s: (88.0...96.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20  
Speed rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 10.70...11.70

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 27.0...33.0  
1000 s: (25.0...35.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: C.D.C. # 3916626

Start-of-delivery mark 6° cam angle  
after start of delivery cyl. 1

Bow dimension:

Sliding-sleeve position = 37.0 mm

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : CUM  
 Edition : 22.01.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 830  
 Injection pump  
 Pump designation : PES6P110A12ORS7263  
 EP type number : 0 412 716 808  
 Governor  
 Governor design. : RQV350..1250PA964  
 -11K  
 Governor no. : 0 421 815 321

Customer-spec. information  
 Customer : CUMMINS

Engine : 6BTAA

1st version kW : 154.0  
 Rated speed : 2500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 4.35...4.45  
 : (4.30...4.50)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1100

Rack travel in mm : 13.80...13.90

Del.quantity cm<sup>3</sup>/ : 15.1...15.3

100 s: (14.8...15.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.9...5.2

Del.quantity cm<sup>3</sup>/ : 2.3...2.9

100 s: (2.1...3.1)

Spread cm<sup>3</sup> : 0.7

100 s: (1.1)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1295

travel mm : 7.90...8.10

2nd speed rpm : 350

travel mm : 1.60...1.80

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 900

travel mm : 4.60...5.20

5th speed rpm : 1600

travel mm : 11.00...12.00

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : 6.00...12.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 151.0...153.0  
1000 : (148.0...156.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 13.50  
Speed rpm : 1305...1315  
2nd rack travel in: 4.00  
Speed rpm : 1435...1465  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 68...76

Testing:  
Speed rpm : 250  
Minimum rack travel: 6.50  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 310...440

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.80...13.90  
2nd speed rpm : 750  
Rack travel in m: 12.30...12.50  
3rd speed rpm : 1250  
Rack travel in m: 14.40...14.60  
4th speed rpm : 400  
Rack travel in m: 11.30...11.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1250  
Pressure hPa : 1200  
Rack travel mm : 14.40...14.60

Measurement  
Speed 1/min : 1250

1st pressure hPa : -  
Rack travel in m: 9.50...9.90  
2nd pressure hPa : 775

Rack travel in m: 13.10...13.20  
3rd pressure hPa : 570  
Rack travel in m: 11.10...11.50

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 151.0...157.0  
1000 s: (148.0...160.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 123.0...125.0  
1000 s: (120.0...128.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 1305...1315

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...175.0  
1000 s: (131.0...179.0)  
Rack travel in mm : 12.00...13.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.90...5.10

#### Remarks:

: C.D.C. # 3281780  
Start-of-delivery blocking 6,5° after  
start of delivery of cylinder no. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
 Edition : 16.08.93  
 Replaces : 04.93  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 835  
 Injection pump  
 Pump designation : PES6P120A12ORS7265  
 EP type number : 0 412 726 882  
 Governor  
 Governor design. : RQV350...900PA964-13  
 K  
 Governor no. : 0 421 815 324

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 205.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 086

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 90...110

Test nozzle holder  
 assembly : 1 688 901 103

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.50...14.60

Del. quantity cm<sup>3</sup>/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.5

Del. quantity cm<sup>3</sup>/ : 2.0...2.6

100 s: (1.8...2.8)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.60...1.80

2nd speed rpm : 450  
 travel mm : 3.00...3.40

3rd speed rpm : 600  
 travel mm : 5.20...5.60

4th speed rpm : 1000  
 travel mm : 8.40...8.60

5th speed rpm : 1150  
 travel mm : 9.80...10.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del. quantity : 240.5...242.5

1000 : (237.5...245.5)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

#### Testing:

1st rack travel in: 13.00  
Speed rpm : 1045...1075  
2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 275  
Minimum rack travel: 8.10  
Speed rpm : 350  
Rack travel in mm : 6.30...6.50

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 650  
Rack travel in m: 13.40...13.80  
3rd speed rpm : 1000  
Rack travel in m: 14.00...14.20  
4th speed rpm : 750  
Rack travel in m: 13.70...14.10

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1200  
Rack travel mm : 14.00...14.20

#### Measurement

Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 9.20...9.60  
2nd pressure hPa : 325  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 765

Rack travel in m: 13.10...13.50

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 218.0...224.0  
1000 s: (215.0...227.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 223.5...229.5  
1000 s: (220.5...232.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 94.5...98.5  
1000 s: (92.5...100.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1045...1075

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 180.0...220.0  
1000 s: (175.0...225.0)  
Rack travel in mm : 12.00...13.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.30...6.50  
Del. quantity cm<sup>3</sup>/ : 20.0...26.0  
1000 s: (18.0...28.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: C.D.C. # 3922446

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
 Edition : 16.07.93  
 Replaces : 06.93  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 836  
 Injection pump  
 Pump designation : PES6P120A120RS7265  
 EP type number : 0 412 726 882  
 Governor  
 Governor design. : RQV350...1000PA964  
 -14K  
 Governor no. : 0 421 815 325

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 205.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 086

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 90...110

Test nozzle holder  
 assembly : 1 688 901 103

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.50...14.60

Del. quantity cm<sup>3</sup>/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.5

Del. quantity cm<sup>3</sup>/ : 2.0...2.6

100 s: (1.8...2.8)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.80...2.00

2nd speed rpm : 450  
travel mm : 3.10...3.50

3rd speed rpm : 600  
travel mm : 5.10...5.50

4th speed rpm : 1000  
travel mm : 8.10...8.30

5th speed rpm : 1200  
travel mm : 9.60...10.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del. quantity : 236.0...238.0

1000 : (233.0...241.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

#### Testing:

1st rack travel in: 12.90  
Speed rpm : 1145...1175  
2nd rack travel in: 4.00  
Speed rpm : 1295...1305  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 12...20

#### Testing:

Speed rpm : 275  
Minimum rack travel: 8.10  
Speed rpm : 350  
Rack travel in mm : 6.30...6.50

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 650  
Rack travel in m: 13.10...13.50  
3rd speed rpm : 1100  
Rack travel in m: 13.90...14.10  
4th speed rpm : 750  
Rack travel in m: 13.40...13.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1200  
Rack travel mm : 14.50...14.60

#### Measurement

Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 9.20...9.60  
2nd pressure hPa : 325  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 765

Rack travel in m: 13.10...13.50

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 203.5...209.5  
1000 s: (200.5...212.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 209.5...215.0  
1000 s: (206.5...218.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 94.5...98.5  
1000 s: (92.5...100.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 12.90  
Speed rpm : 1145...1175

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 180.0...220.0  
1000 s: (175.0...225.0)  
Rack travel in mm : 12.00...13.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.30...6.50  
Del. quantity cm<sup>3</sup>/ : 20.0...26.0  
1000 s: (18.0...28.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: C.D.C. # 3922427

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM  
 Edition : 16.08.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 837  
 Injection pump  
 Pump designation : PES6P120A120RS7265  
 EP type number : 0 412 726 882  
 Governor  
 Governor design. : RQV350...1100PA964  
 -15K  
 Governor no. : 0 421 815 332

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CTA-A

1st version kw : 186.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 086

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 90...110

Test nozzle holder  
 assembly : 1 688 901 103

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.80...13.90

Del.quantity cm<sup>3</sup>/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm<sup>3</sup>/ : 2.0...2.6

100 s: (1.8...2.8)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.80...2.00

2nd speed rpm : 450

travel mm : 3.10...3.50

3rd speed rpm : 600

travel mm : 5.10...5.50

4th speed rpm : 1000

travel mm : 8.10...8.30

5th speed rpm : 1200

travel mm : 9.60...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 215.5...217.5

1000 : (212.5...220.5)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 114...126

Testing:

1st rack travel in: 12.40  
Speed rpm : 1150...1180  
2nd rack travel in: 4.00  
Speed rpm : 1295...1305  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 62...74

Testing:

Speed rpm : 275  
Minimum rack travel: 8.10  
Speed rpm : 350  
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.80...13.90  
2nd speed rpm : 650  
Rack travel in m: 13.10...13.50  
3rd speed rpm : 1100  
Rack travel in m: 13.40...13.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1200  
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 9.20...9.60  
2nd pressure hPa : 325  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 765  
Rack travel in m: 13.10...13.50

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 205.0...211.0  
1000 s: (202.0...214.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 94.5...98.5  
1000 s: (92.5...100.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.40  
Speed rpm : 1150...1180

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 180.0...220.0  
1000 s: (175.0...225.0)  
Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Del. quantity cm<sup>3</sup>/ : 20.0...26.0  
1000 s: (18.0...28.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: C.D.C. # 3922449

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
 Edition : 16.07.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 842  
 Injection pump  
 Pump designation : PES6P120A120RS7281  
 EP type number : 0 412 726 890  
 Governor  
 Governor design. : RQV400...1250PA1060  
 -1K  
 Governor no. : 0 421 815 344

Customer spec. information  
 Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 119.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 105...125

Test nozzle holder  
 assembly : 1 688 901 103

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 13.40...13.50

Del. quantity cm<sup>3</sup>/ : 15.7...15.9

100 s: (15.4...16.2)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

2nd speed rpm : 400.0

Rack travel in mm : 6.0...6.4

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.3...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 400  
travel mm : 1.40...1.60

2nd speed rpm : 550  
travel mm : 2.50...2.90

3rd speed rpm : 800  
travel mm : 4.00...4.40

4th speed rpm : 1250  
travel mm : 6.90...7.10

5th speed rpm : 1500  
travel mm : 9.10...9.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Aneroid pressure h: 1200  
 Del. quantity : 157.0...159.0  
 1000 : (154.0...162.0)

Spread cm<sup>3</sup> : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 12.40  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1465...1495  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.80  
Speed rpm : 400  
Rack travel in mm : 6.00...6.40

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 13.40...13.50  
2nd speed rpm : 800  
Rack travel in m: 11.60...12.00  
3rd speed rpm : 500  
Rack travel in m: 11.40...11.80  
4th speed rpm : 900  
Rack travel in m: 12.00...12.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1250  
Pressure hPa : 1200  
Rack travel mm : 13.40...13.50

Measurement  
Speed 1/min : 1250

1st pressure hPa : -  
Rack travel in m: 10.30...10.70  
2nd pressure hPa : 265  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 440

L04

Rack travel in m: 12.50...12.90

#### START CUT-OUT

Speed 1/min : 250 (260)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 124.5...130.5  
1000 s: (121.5...133.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 900  
Del. quantity cm<sup>3</sup>/ : 137.5...143.5  
1000 s: (134.5...146.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 1250  
Del. quantity cm<sup>3</sup>/ : 108.5...112.5  
1000 s: (106.5...114.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.40  
Speed rpm : 1320...1330

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 13.00...14.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.00...6.40  
Del. quantity cm<sup>3</sup>/ : 15.0...21.0  
1000 s: (13.0...23.0)  
Spread cm<sup>3</sup> : 4.00  
1000 s: (8.00)

Remarks:

: C.D.C. # 3925085

Start-of-delivery blocking 5,75° after  
start of delivery of cylinder no. 1.

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : CUM  
 Edition : 16.08.93  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 736 843  
  
 Injection pump  
 Pump designation : PES6P120A120RS7281  
 EP type number : 0 412 726 890  
 Governor  
 Governor design. : RQV400...1250PA1060K  
 Governor no. : 0 421 815 343

Customer-spec. information  
 Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 130.0  
 Rated speed : 2500

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 105...125

Test nozzle holder  
 assembly : 1 688 901 103

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 9.00...12.00  
 firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

### BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 13.80...13.90

Del. quantity cm<sup>3</sup>/ : 16.8...17.0

100 s: (16.5...17.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

2nd speed rpm : 400.0

Rack travel in mm : 6.3...6.7

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.3...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

(B) Setting of injection pump  
with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 400  
 travel mm : 1.40...1.60

2nd speed rpm : 550  
 travel mm : 2.50...2.90

3rd speed rpm : 800  
 travel mm : 4.00...4.40

4th speed rpm : 1250  
 travel mm : 6.90...7.10

5th speed rpm : 1500  
 travel mm : 9.10...9.50

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1200

Del. quantity : 168.5...170.5

1000 : (165.5...173.5)



Spread cm3 : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 12.80  
Speed rpm : 1310...1320  
2nd rack travel in: 4.00  
Speed rpm : 1465...1495  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 300  
Minimum rack travel: 7.80  
Speed rpm : 400  
Rack travel in mm : 6.30...6.70

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 13.80...13.90  
2nd speed rpm : 800  
Rack travel in m: 12.10...12.30  
3rd speed rpm : 500  
Rack travel in m: 11.60...12.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1250  
Pressure hPa : 1200  
Rack travel mm : 13.80...13.90

Measurement  
Speed 1/min : 1250

1st pressure hPa : -  
Rack travel in m: 10.40...10.80  
2nd pressure hPa : 260  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 430  
Rack travel in m: 13.00...13.40

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 800  
Del. quantity cm3/ : 137.0...143.0  
1000 s: (134.0...145.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 1250  
Del. quantity cm3/ : 110.0...114.0  
1000 s: (108.0...116.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack travel: 12.80  
Speed rpm : 1310...1320

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 13.00...14.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.30...6.70  
Del. quantity cm3/ : 15.0...21.0  
1000 s: (13.0...23.0)  
Spread cm3 : 4.00  
1000 s: (8.00)

Remarks:  
: C.D.C. # 3925086  
Start-of-delivery blocking 5,75° after  
start of delivery of cylinder no. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
 Edition : 16.07.93  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 736 844

Injection pump  
 Pump designation : PES6P120A120RS7287  
 EP type number : 0 412 726 896  
 Governor  
 Governor design. : RQV400...1250PA964  
 -21K  
 Governor no. : 0 421 815 354

Customer-spec. information  
 Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 171.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 036

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 90...110

Test nozzle holder  
 assembly : 1 688 901 103

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 10.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 15.00...15.10

Del. quantity cm<sup>3</sup>/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

2nd speed rpm : 400.0

Rack travel in mm : 6.1...6.5

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.3...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 400  
 travel mm : 1.40...1.60

2nd speed rpm : 550  
 travel mm : 3.10...3.50

3rd speed rpm : 800  
 travel mm : 4.30...4.70

4th speed rpm : 1250  
 travel mm : 7.00...7.20

5th speed rpm : 1500  
 travel mm : 9.20...9.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1200

Del. quantity : 199.0...201.0

1000 : (196.0...204.0)

Spread cm<sup>3</sup> : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 59...67

Testing:

1st rack travel in: 13.50  
Speed rpm : 1310...1320  
2nd rack travel in: 4.00  
Speed rpm : 1460...1490  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 12...20

Testing:

Speed rpm : 300  
Minimum rack travel: 7.80  
Speed rpm : 400  
Rack travel in mm : 6.10...6.50

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 15.00...15.10  
2nd speed rpm : 900  
Rack travel in m: 14.30...14.50  
3rd speed rpm : 600  
Rack travel in m: 13.20...13.60  
4th speed rpm : 1250  
Rack travel in m: 14.50...14.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1150  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 1150

1st pressure hPa : -  
Rack travel in m: 10.10...10.50  
2nd pressure hPa : 355  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 645

Rack travel in m: 13.30...13.70

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 900  
Del. quantity cm<sup>3</sup>/ : 183.0...189.0  
1000 s: (180.0...192.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 1150  
Del. quantity cm<sup>3</sup>/ : 94.5...98.5  
1000 s: (92.5...100.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 1310...1320

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.10...6.50  
Del. quantity cm<sup>3</sup>/ : 15.0...21.0  
1000 s: (13.0...23.0)  
Spread cm<sup>3</sup> : 4.00  
1000 s: (8.00)

Remarks:

: C.D.C. # 3921925

Mark position of port-opening mark  
6.25° before port opening cylinder 1  
on clutch

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : CUM  
 Edition : 16.08.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 845  
 Injection pump  
 Pump designation : PES6P12QA12ORS7286  
 EP type number : 0 412 726 894  
 Governor  
 Governor design. : RQV350...1100PA964  
 -20K  
 Governor no. : 0 421 815 352

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 224.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 086

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 95...115

Test nozzle holder  
 assembly : 1 688 901 103

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1100

Rack travel in mm : 15.00...15.10

Del.quantity cm<sup>3</sup>/ : 24.9...25.1

100 s: (24.6...25.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.8

Del.quantity cm<sup>3</sup>/ : 1.8...2.4

100 s: (1.6...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 350  
 travel mm : 2.10...2.40

2nd speed rpm : 450  
 travel mm : 3.20...3.60

3rd speed rpm : 900  
 travel mm : 5.60...6.00

4th speed rpm : 1200  
 travel mm : 8.10...8.30

5th speed rpm : 1400  
 travel mm : 10.20...10.60

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 1200  
 Del.quantity : 249.0...251.0  
 1000 : (246.0...254.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 13.30  
Speed rpm : 1240...1270  
2nd rack travel in: 4.00  
Speed rpm : 1395...1405  
4th rack travel in: 1475  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 14...22

#### Testing:

Speed rpm : 275  
Minimum rack travel: 7.70  
Speed rpm : 350  
Rack travel in mm : 6.40...6.80

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 15.00...15.10  
2nd speed rpm : 650  
Rack travel in m: 13.30...13.70  
3rd speed rpm : 1200  
Rack travel in m: 14.30...14.50  
4th speed rpm : 750  
Rack travel in m: 13.60...14.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1100  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

#### Measurement

Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 9.20...9.60  
2nd pressure hPa : 345  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 725

Rack travel in m: 13.60...14.00

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 210.5...216.5  
1000 s: (207.5...219.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 90.5...94.5  
1000 s: (88.5...96.5)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30  
Speed rpm : 1240...1270

#### STARTING FUEL DELIVERY

Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 180.0...220.0  
1000 s: (175.0...225.0)  
Rack travel in mm : 12.00...13.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.40...6.80  
Del.quantity cm<sup>3</sup>/ : 18.0...24.0  
1000 s: (16.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: C.D.C. # 3922425

Start-of-delivery blocking 6,5° after  
start of delivery of cylinder no. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 745 800  
  
Injection pump  
Pump designation : PES5P120A720LS7101  
-10  
EP type number : 0 412 725 811  
Governor  
Governor design. : RQ300/1050PA690  
Governor no. : 0 421 801 234

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM429 LA

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.50  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.80...13.90

Del. quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del. quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.80  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1145...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 12.00...12.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : 240  
Rack travel in m: 12.30...12.40  
2nd pressure hPa : 350  
Rack travel in m: 13.30...13.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 197.0...201.0  
1000 s: (194.0...204.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: 700  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 204.0...208.0  
1000 s: (201.0...211.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 157.0...159.0  
1000 s: (154.0...162.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (156.0...184.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 745 803  
 Injection pump  
 Pump designation : PES5F120A720LS7152  
 -10  
 EP type number : 0 412 725 812  
 Governor  
 Governor design. : RQ300/1050PA690-2  
 Governor no. : 0 421 801 427

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM429 LA

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.70...13.80

Del.quantity cm<sup>3</sup>/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:



1st rack travel in: 12.70  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.30  
Speed rpm : 300  
Rack travel in mm : 6.30...6.60  
Rack travel in mm : 2.00  
Speed rpm : 365...405

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.20...11.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : 250  
Rack travel in m: 11.40...11.50  
2nd pressure hPa : 500  
Rack travel in m: 12.70...12.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 800  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 204.0...210.0  
1000 s: (201.0...213.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 135.0...137.0  
1000 s: (132.0...140.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 745 805  
 Injection pump  
 Pump designation : PES5P120A720LS7160  
 -10  
 EP type number : 0 412 725 813  
 Governor  
 Governor design. : RQ300/1050PA774-2  
 Governor no. : 0 421 801 450

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM449 A

1st version kW : 184.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.10...13.30

Del. quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.3

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 650

Del. quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.60  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0

Testing:

Speed rpm : 200  
Minimum rack travel: 7.90  
Speed rpm : 300  
Rack travel in mm : 5.70...6.30  
Rack travel in mm : 2.00  
Speed rpm : 365...405

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.60...13.80  
2nd speed rpm : 750  
Rack travel in m: 14.00...14.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 13.10...13.30

Measurement

Speed 1/min : 600  
1st pressure hPa : 250  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 400  
Rack travel in m: 12.50...12.70  
3rd pressure hPa : 750  
Rack travel in m: 13.20...13.30 \*  
4th pressure hPa : 850  
Rack travel in m: 13.60...13.80  
5th pressure hPa : -  
Rack travel in m: 10.80...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

L16

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 208.0...211.0  
1000 s: (205.0...214.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 150.0...152.0  
1000 s: (147.0...155.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.60  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 745 806  
  
 Injection pump  
 Pump designation : PES5P120A720LS7163  
                           -10  
 EP type number : 0 412 725 814  
 Governor  
 Governor design. : RQ300/1050PA774-4  
 Governor no. : 0 421 801 453

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM449 LA

1st version kW : 221.0  
 Rated speed : 2100

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
                           : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

### BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                           : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

### BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del. quantity cm<sup>3</sup>/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.9

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del. quantity : 235.0...237.0

1000 : (232.0...240.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

### RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 13.00  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

Testing:

Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 5.60...5.90  
Rack travel in mm : 2.00  
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.65  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.00...13.20  
2nd speed rpm : 750  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600  
1st pressure hPa : 200  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 450  
Rack travel in m: 13.00...13.20  
3rd pressure hPa : 1000  
Rack travel in m: 13.70...13.80 \*  
4th pressure hPa : 1125  
Rack travel in m: 14.10...14.30  
5th pressure hPa : -  
Rack travel in m: 10.00...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

L18

1st version

Aneroid pressure h: 1400  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 228.0...231.0  
1000 s: (225.0...234.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: 1400  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 250.0...254.0  
1000 s: (247.0...257.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 745 807  
  
 Injection pump  
 Pump designation : PES5P120A720LS7174-1  
 EP type number : 0 412 725 815  
 Governor  
 Governor design. : RQ300/1050PA774-2  
 Governor no. : 0 421 801 45C

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM449 A

1st version kW : 184.0  
 Rated speed : 2100

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

### BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del. quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...7.0

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 650

Del. quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

### RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

Testing:

Speed rpm : 200  
Minimum rack travel: 8.70  
Speed rpm : 300  
Rack travel in mm : 6.40...7.00  
Rack travel in mm : 2.00  
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 14.40...14.60  
2nd speed rpm : 750  
Rack travel in m: 14.90...15.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600  
1st pressure hPa : 250  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 400  
Rack travel in m: 13.50...13.70  
3rd pressure hPa : 750  
Rack travel in m: 14.20...14.30 \*  
4th pressure hPa : 850  
Rack travel in m: 14.60...14.80  
5th pressure hPa : -  
Rack travel in m: 11.90...12.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 208.0...211.0  
1000 s: (205.0...214.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 150.0...152.0  
1000 s: (147.0...155.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.40  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 745 808

Injection pump  
Pump designation : PES5P120A720LS7175  
-10  
EP type number : 0 412 725 816  
Governor  
Governor design. : RQ300/1050PA77<sup>1</sup>/<sub>4</sub>-4  
Governor no. : 0 421 801 453

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM449 LA

1st version kW : 221.0  
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm<sup>3</sup>/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.9

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 235.0...237.0

1000 : (232.0...240.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600



Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 13.00  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

Testing:

Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm: 5.60...5.90  
Rack travel in mm : 2.00  
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.65  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.00...13.20  
2nd speed rpm : 750  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600  
1st pressure hPa : 200  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 450  
Rack travel in m: 13.00...13.20  
3rd pressure hPa : 1000  
Rack travel in m: 13.70...13.80 \*  
4th pressure hPa : 1125  
Rack travel in m: 14.10...14.30  
5th pressure hPa : -  
Rack travel in m: 10.00...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 1050  
Del.quantity cm3/ : 228.0...231.0  
1000 s: (225.0...234.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 750  
Del.quantity cm3/ : 250.0...254.0  
1000 s: (247.0...257.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 745 809  
 Injection pump  
 Pump designation : PES5P120A720LS7160  
 -10  
 EP type number : 0 412 725 813  
 Governor  
 Governor design. : RQV300...1050PA940  
 Governor no. : 0 421 813 824

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM449 A

1st version kW : 184.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...7.1

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.10...1.30

2nd speed rpm : 600  
 travel mm : 4.90...5.10

3rd speed rpm : 800  
 travel mm : 5.80...6.10

4th speed rpm : 1100  
 travel mm : 8.20...8.60

5th speed rpm : 1175  
 travel mm : 9.50...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 650  
Del. quantity : 196.0...198.0  
1000 : (193.0...201.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

#### Testing:

1st rack travel in: 13.60  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 80...38

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.80  
Speed rpm : 300  
Rack travel in mm : 6.50...7.10

#### CONSTANT REGULATION

Speed rpm : 300...400

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 14.50...14.70  
2nd speed rpm : 750  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 900  
Rack travel in m: 14.70...14.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 13.10...13.30

#### Measurement

Speed 1/min : 600

1st pressure hPa : 250

Rack travel in m: 11.20...11.40  
2nd pressure hPa : 400  
Rack travel in m: 12.50...12.70  
3rd pressure hPa : 750  
Rack travel in m: 13.20...13.30 \*  
4th pressure hPa : 850  
Rack travel in m: 14.10...14.30  
5th pressure hPa : -  
Rack travel in m: 11.90...12.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 208.0...211.0  
1000 s: (205.0...214.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 150.0...152.0  
1000 s: (147.0...155.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.60  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm



1st version  
Speed rpm : 600  
Aneroid pressure h: 800  
Del. quantity : 235.0...237.0  
1000 : (232.0...240.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.00  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 80...88

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.60...5.90

CONSTANT REGULATION  
Speed rpm : 300...400

TORQUE CONTROL  
Dimension a mm : 1.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.00...13.20  
2nd speed rpm : 750  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 13.60...13.80

Measurement  
Speed 1/min : 600

1st pressure hPa : 200  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 450

Rack travel in m: 13.00...13.20  
3rd pressure hPa : 1000  
Rack travel in m: 13.70...13.80 \*  
4th pressure hPa : 1125  
Rack travel in m: 14.10...14.30  
5th pressure hPa : -  
Rack travel in m: 10.00...10.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1400  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 228.0...231.0  
1000 s: (225.0...234.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 250.0...254.0  
1000 s: (247.0...257.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack travel: 12.00  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 804  
  
Injection pump  
Pump designation : PES6P120A720LS7107  
-10  
EP type number : 0 412 726 864  
Governor  
Governor design. : RQ300/1100PA757  
Governor no. : 0 421 801 294

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM427ha

1st version kW : 206.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...110

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.40...13.50

Del. quantity cm<sup>3</sup>/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.0

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 750

Del. quantity : 197.0...199.0

1000 : (194.0...202.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.40  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.70...11.00

Measurement

Speed 1/min : 500

1st pressure hPa : 230  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 370  
Rack travel in m: 12.40...12.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750  
Speed rpm : 600  
Del.quantity cm3/ : 195.0...198.0  
1000 s: (192.0...201.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)

Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 805  
  
Injection pump  
Pump designation : PES6P120A720LS7114  
-10  
EP type number : 0 412 726 865  
Governor  
Governor design. : RQ300/900PA775  
Governor no. : 0 421 801 319

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM447 LA

1st version kw : 300.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...110

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.40...12.60

Del. quantity cm<sup>3</sup>/ : 22.0...22.2

100 s: (21.7...22.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 750

Del. quantity : 220.0...222.0

1000 : (217.0...225.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650



Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.20

Speed rpm : 945...960

2nd rack travel in: 4.00

Speed rpm : 990...1020

4th rack travel in: 1150

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.1

Testing:

Speed rpm : 100

Minimum rack travel: 6.70

Speed rpm : 300

Rack travel in mm : 5.00...5.20

Rack travel in mm : 2.00

Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 11.20...11.40

2nd speed rpm : 750

Rack travel in m: 12.40...12.60

3rd speed rpm : 850

Rack travel in m: 11.80...11.90

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 9.40...9.60

Measurement

Speed 1/min : 500

1st pressure hPa : 350

Rack travel in m: 9.90...10.10

2nd pressure hPa : 550

Rack travel in m: 11.30...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750

M02

Speed rpm : 900

Del.quantity cm3/ : 197.0...203.0

1000 s: (194.0...206.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 142.0...149.0

1000 s: (139.0...152.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 945...960

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 200.0...220.0

1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 808  
 Injection pump  
 Pump designation : PES6P120A720LS7107  
 -10  
 EP type number : 0 412 726 864  
 Governor  
 Governor design. : RQ300/1100PA805  
 Governor no. : 0 421 801 352

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OMV47ha

1st version kW : 206.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 13.40...13.50  
 Del. quantity cm<sup>3</sup>/ : 19.7...19.9  
 100 s: (19.4...20.2)

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.8...6.2  
 Del. quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s: (1.1...2.3)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 650  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 750  
 Del. quantity : 197.0...199.0  
 1000 : (194.0...202.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.40  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.40...11.70

Measurement

Speed 1/min : 500

1st pressure hPa : 230  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 370  
Rack travel in m: 13.10...13.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 193.0...196.0  
1000 s: (190.0...199.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 149.0...151.0  
1000 s: (146.0...154.0)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 746 841

Injection pump  
Pump designation : PES6P120A720LS7114  
-12  
EP type number : 0 412 726 866  
Governor  
Governor design. : RQ300/1050PA774-3  
Governor no. : 0 421 801 451

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM447 LA

1st version kW : 265.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del. quantity cm<sup>3</sup>/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del. quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.20  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0  
Speed rpm : 300  
Rack travel in mm : 5.80...6.20  
Rack travel in mm : 2.00  
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 1050  
Rack travel in m: 14.20...14.40  
3rd speed rpm : 700  
Rack travel in m: 14.70...14.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600  
1st pressure hPa : 300  
Rack travel in m: 11.80...12.00  
2nd pressure hPa : 500  
Rack travel in m: 13.40...13.60  
3rd pressure hPa : 1100  
Rack travel in m: 14.20...14.40  
4th pressure hPa : 1200  
Rack travel in m: 14.50...14.70  
5th pressure hPa : -  
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 1050

Del.quantity cm<sup>3</sup>/ : 234.0...238.0  
1000 s: (231.0...241.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 246.0...249.0  
1000 s: (243.0...252.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.20  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 843  
 Injection pump  
 Pump designation : PES6P120A720LS7161  
 -10  
 EP type number : 0 412 726 868  
 Governor  
 Governor design. : RQ300/1050PA897  
 Governor no. : 0 421 801 452

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM47 A

1st version kW : 213.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del. quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.6

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 680

Del. quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.00...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.50...13.70  
2nd speed rpm : 750  
Rack travel in m: 14.80...15.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600  
1st pressure hPa : 300  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 400  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 800  
Rack travel in m: 14.20...14.30  
4th pressure hPa : -  
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 193.0...195.0  
1000 s: (190.0...198.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 218.0...222.0  
1000 s: (215.0...225.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.50  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 854  
 Injection pump  
 Pump designation : PES6P120A720LS7114  
 -13  
 EP type number : 0 412 726 867  
 Governor  
 Governor design. : RQ300/1050PA911  
 Governor no. : 0 421 801 476

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM447 LA

1st version kw : 257.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del. quantity cm<sup>3</sup>/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del. quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600



Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 13.00  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0  
Speed rpm : 300  
Rack travel in mm : 5.80...6.20  
Rack travel in mm : 2.00  
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 13.60...13.80  
3rd speed rpm : 700  
Rack travel in m: 14.10...14.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600  
1st pressure hPa : 300  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 600  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 1000  
Rack travel in m: 13.70...13.80 \*  
4th pressure hPa : 1100  
Rack travel in m: 13.90...14.10  
5th pressure hPa : -  
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 1050

Del.quantity cm3/ : 229.0...233.0  
1000 s: (226.0...236.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 800  
Del.quantity cm3/ : 244.0...247.0  
1000 s: (241.0...250.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.70  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 855  
 Injection pump  
 Pump designation : PES6P120A720LS7176  
 -10  
 EP type number : 0 412 726 869  
 Governor  
 Governor design. : RQ300/1050PA897  
 Governor no. : 0 421 801 452

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM447 A

1st version kW : 213.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del. quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.6

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 680

Del. quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.00...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.50...13.70  
2nd speed rpm : 750  
Rack travel in m: 14.70...14.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600  
1st pressure hPa : 300  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 400  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 800  
Rack travel in m: 14.20...14.30 \*  
4th pressure hPa : -  
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm3/ : 193.0...195.0  
1000 s: (190.0...198.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 218.0...222.0  
1000 s: (215.0...225.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.50  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...200.0  
1000 s: (176.0...204.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 858  
  
Injection pump  
Pump designation : PES6P120A720LS7181  
-10  
EP type number : 0 412 726 870  
Governor  
Governor design. : RQ300/1050PA911-1  
Governor no. : 0 421 801 431

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM447 LA

1st version kW : 294.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.20...15.40

Del. quantity cm<sup>3</sup>/ : 27.4...27.6

100 s: (27.1...27.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del. quantity : 274.0...276.0

1000 : (271.0...279.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0  
Speed rpm : 300  
Rack travel in mm : 5.80...6.20  
Rack travel in mm : 2.00  
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.50  
2nd speed rpm : 1050  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 850  
Rack travel in m: 15.60...15.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 15.20...15.40

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 700  
Rack travel in m: 14.00...14.20  
3rd pressure hPa : 1300  
Rack travel in m: 15.40...15.60  
4th pressure hPa : 1450  
Rack travel in m: 15.90...16.10  
5th pressure hPa : -  
Rack travel in m: 10.00...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600  
Speed rpm : 1050

Del.quantity cm<sup>3</sup>/ : 269.0...272.0  
1000 s: (266.0...275.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 298.0...301.0  
1000 s: (295.0...304.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 143.0...145.0  
1000 s: (140.0...148.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 250.0...270.0  
1000 s: (246.0...274.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 860  
 Injection pump  
 Pump designation : PES6P120A720LS7161  
 -10  
 EP type number : 0 412 726 868  
 Governor  
 Governor design. : RQV300...1050PA940-3  
 Governor no. : 0 421 813 827

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM47 A

1st version kw : 213.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del. quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.7

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.6

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.30

2nd speed rpm : 600  
travel mm : 4.90...5.10

3rd speed rpm : 800  
travel mm : 5.90...6.20

4th speed rpm : 1100  
travel mm : 8.10...8.50

5th speed rpm : 1175  
travel mm : 9.70...10.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1085

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 681  
Del.quantity : 201.0...203.0  
1000 : (198.0...206.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Setting point:  
Speed rpm : 1085  
Rack travel in mm : 16.5

Testing:  
1st rack travel in: 12.50  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 82...90

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.60  
Speed rpm : 300  
Rack travel in mm : 6.30...6.70

CONSTANT REGULATION  
Speed rpm : 300...450

TORQUE CONTROL  
Dimension a mm : 1.20  
2nd speed rpm : 1050  
Rack travel in m: 13.50...13.70  
3rd speed rpm : 750  
Rack travel in m: 14.70...14.90

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.10...14.30

Measurement  
Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.40...12.60

2nd pressure hPa : 400  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 800  
Rack travel in m: 14.20...14.30 \*  
4th pressure hPa : -  
Rack travel in m: 11.30...11.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 193.0...195.0  
1000 s: (190.0...198.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 218.0...222.0  
1000 s: (215.0...225.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.50  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...190.0  
1000 s: (166.0...194.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 881  
 Injection pump  
 Pump designation : PES6P120A720LS7195  
 -10  
 EP type number : 0 412 726 871  
 Governor  
 Governor design. : RQ300/1100PA805-1  
 Governor no. : 0 421 801 505

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM447hA

1st version kW : 206.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.40...13.50

Del. quantity cm<sup>3</sup>/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 750

Del. quantity : 197.0...199.0

1000 : (194.0...202.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650



Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.40  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.80...9.00

Measurement

Speed 1/min : 500

1st pressure hPa : 250  
Rack travel in m: 8.90...9.20  
2nd pressure hPa : 500  
Rack travel in m: 11.50...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 192.0...195.0  
1000 s: (188.0...198.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 129.0...131.0  
1000 s: (126.0...134.0)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB  
 Edition : 21.09.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 913  
 Injection pump  
 Pump designation : PES6P120A720LS7237-1  
 EP type number : 0 412 726 872  
 Governor  
 Governor design. : RQ300/1100FA10G8-1  
 Governor no. : 0 421 801 592

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM447 ha

1st version kW : 184.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 600

Rack travel in mm : 12.00...12.20

Del. quantity cm<sup>3</sup>/ : 16.1...16.3  
 100 s: (15.8...16.6)

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.5...7.1  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 500  
 Del. quantity : 161.0...163.0  
 1000 : (158.0...166.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.30  
Speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Rack travel in mm : 2.00  
Speed rpm : 370...410

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 600  
Pressure hPa : 500  
Rack travel mm : 12.00...12.20

##### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 700  
Rack travel in m: 12.10...12.30 \*  
3rd pressure hPa : 1100  
Rack travel in m: 12.80...13.00  
4th pressure hPa : -  
Rack travel in m: 11.70...12.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1400  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 193.0...196.0  
1000 s: (190.0...199.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 195.0...199.0  
1000 s: (192.0...202.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 139.0...141.0  
1000 s: (136.0...144.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 60.0...80.0  
1000 s: (56.0...84.0)  
Rack travel in mm : 11.70...12.10

Remarks:

:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 916  
 Injection pump  
 Pump designation : PES6P120A720LS7237  
 -10  
 EP type number : 0 412 726 872  
 Governor  
 Governor design. : RQ300/1100PA1010  
 Governor no. : 0 421 801 596

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.00...12.20

Del. quantity cm<sup>3</sup>/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.4

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 500

Del. quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.20  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.80...6.40  
Rack travel in mm : 2.00  
Speed rpm : 390...430

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 500  
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 700  
Rack travel in m: 12.10...12.30 \*  
3rd pressure hPa : 1100  
Rack travel in m: 12.80...13.00  
4th pressure hPa : -  
Rack travel in m: 11.70...12.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 193.0...196.0  
1000 s: (190.0...199.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 195.0...199.0  
1000 s: (192.0...202.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 139.0...141.0  
1000 s: (136.0...144.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (205.0...234.0)

Remarks:

:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 21.08.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 917  
 Injection pump  
 Pump designation : PES6P120A720LS7238  
 -10  
 EP type number : 0 412 726 873  
 Governor  
 Governor design. : RQ300/1100PA1010-1  
 Governor no. : 0 421 801 597

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM447 hLA

1st version kW : 220.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.90

Del. quantity cm<sup>3</sup>/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 600

Del. quantity : 205.0...207.0

1000 : (202.0...210.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.30  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1245...1275  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

Testing:

Speed rpm : 200  
Minimum rack travel: 8.20  
Speed rpm : 300  
Rack travel in mm : 6.00...6.60  
Rack travel in mm : 2.00  
Speed rpm : 370...410

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 600  
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : 150  
Rack travel in m: 11.50...11.70  
2nd pressure hPa : 350  
Rack travel in m: 13.00...13.20  
3rd pressure hPa : 800  
Rack travel in m: 13.80...14.00 \*  
4th pressure hPa : 950  
Rack travel in m: 14.20...14.40  
5th pressure hPa : -  
Rack travel in m: 11.00...11.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 1100  
Del.quantity cm3/ : 221.0...224.0  
1000 s: (218.0...227.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 140.0...142.0  
1000 s: (137.0...145.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.30  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:  
\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 913  
 Injection pump  
 Pump designation : PES6P120A720LS7238  
 -10  
 EP type number : 0 412 726 873  
 Governor  
 Governor design. : RQ300/1100PA1013  
 Governor no. : 0 421 801 599

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM447 hLA

1st version kW : 220.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.65)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del. quantity cm<sup>3</sup>/ : 21.3...21.5

100 s: (21.0...21.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 600

Del. quantity : 213.0...215.0

1000 : (210.0...218.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600



Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.60  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

Testing:

Speed rpm : 200  
Minimum rack travel: 8.20  
Speed rpm : 300  
Rack travel in mm : 6.00...6.60  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 600  
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600

1st pressure hPa : 200  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 400  
Rack travel in m: 13.60...13.80  
3rd pressure hPa : 800  
Rack travel in m: 14.20...14.40  
4th pressure hPa : -  
Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 229.0...232.0  
1000 s: (226.0...235.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 233.0...237.0  
1000 s: (230.0...240.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 148.0...150.0  
1000 s: (145.0...153.0)  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.60  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 746 919  
  
Injection pump  
Pump designation : PES6P120A720LS7237  
-10  
EP type number : 0 412 726 872  
Governor  
Governor design. : RQ300/1100PA1013-1  
Governor no. : 0 421 801 603

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 ha

1st version kw : 184.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.00...12.20

Del. quantity cm<sup>3</sup>/ : 16.3...16.5  
100 s: (16.0...16.8)

Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.6...6.2  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 550

Del. quantity : 163.0...165.0  
1000 : (160.0...168.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.30  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.60...6.20  
Rack travel in mm : 2.00  
Speed rpm : 370...410

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 550  
Rack travel mm : 12.00...12.20

Measurement

Speed 1/min : 600  
1st pressure hPa : 300  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 800  
Rack travel in m: 12.20...12.40  
3rd pressure hPa : 1100  
Rack travel in m: 12.60...12.80  
4th pressure hPa : -  
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1700  
Speed rpm : 1100  
Del.quantity cm3/ : 199.0...202.0  
1000 s: (196.0...205.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1700

Speed rpm : 800  
Del.quantity cm3/ : 203.0...207.0  
1000 s: (200.0...210.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 139.0...141.0  
1000 s: (136.0...144.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 746 923  
  
 Injection pump  
 Pump designation : PES6P120A720LS7237  
                   -10  
 EP type number : 0 412 726 872  
 Governor  
 Governor design. : RQ300/1100PA1013-2  
 Governor no. : 0 421 801 611

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM447 ha

1st version kW : 184.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
                   : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                   : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.00...12.20

Del.quantity cm<sup>3</sup>/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 500

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.20  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.60...6.20  
Rack travel in mm : 2.00  
Speed rpm : 370...410

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 500  
Rack travel mm : 12.00...12.20

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 700  
Rack travel in m: 12.10...12.30  
3rd pressure hPa : 1100  
Rack travel in m: 12.80...13.00  
4th pressure hPa : -  
Rack travel in m: 11.70...12.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 1100  
Del.quantity cm3/ : 193.0...196.0  
1000 s: (190.0...199.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400

Speed rpm : 800  
Del.quantity cm3/ : 195.0...199.0  
1000 s: (192.0...202.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 139.0...141.0  
1000 s: (136.0...144.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : NAV  
 Edition : 16.08.93  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 746 945

Injection pump  
 Pump designation : PES6P120A320LS7284  
 EP type number : 0 412 726 891  
 Governor  
 Governor design. : RQV350...1100PA1063K  
 Governor no. : 0 421 815 348

Customer-spec. information  
 Customer : NAVISTAR

Engine : DTA-531

1st version kW : 205.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 076

Inlet press., bar : 2.80

Overflow  
 quantity min. 1/h: 170...190

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95  
 : (2.80...3.00)  
 Rack travel in mm : 10.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1100

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 17.7...17.9

100 s: (17.4...18.2)

Spread cm<sup>3</sup> : 0.5

100 s: (1.2)

2nd speed rpm : 325.0

Rack travel in mm : 6.6...6.8

Del.quantity cm<sup>3</sup>/ : 2.8...3.4

100 s: (2.6...3.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 350  
 travel mm : 1.90...2.10

2nd speed rpm : 500  
 travel mm : 3.90...4.30

3rd speed rpm : 800  
 travel mm : 6.60...7.00

4th speed rpm : 1100  
 travel mm : 9.00...9.20

5th speed rpm : 1250  
 travel mm : 10.60...11.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 1500  
 Del.quantity : 177.5...179.5  
 1000 : (174.5...182.5)

Spread cm<sup>3</sup> : 5.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

#### Testing:

1st rack travel in: 11.90  
Speed rpm : 1150...1180  
2nd rack travel in: 4.00  
Speed rpm : 1275...1285  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 17...25

#### Testing:

Speed rpm : 275  
Minimum rack travel: 7.50  
Speed rpm : 325  
Rack travel in mm : 6.60...6.80

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 650  
Rack travel in m: 12.40...12.60  
3rd speed rpm : 500  
Rack travel in m: 11.30...11.70  
4th speed rpm : 800  
Rack travel in m: 12.50...12.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1100  
Pressure hPa : 1500  
Rack travel mm : 12.90...13.00

#### Measurement

Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 9.30...9.70  
2nd pressure hPa : 280  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 705

NO4

Rack travel in m: 11.90...12.30

#### START CUT-OUT

Speed 1/min : 280 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1500  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 181.0...187.0  
1000 s: (178.0...190.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 91.5...95.5  
1000 s: (89.5...97.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1150...1180

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...165.0  
1000 s: (120.0...180.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.60...6.80  
Del.quantity cm<sup>3</sup>/ : 28.0...34.0  
1000 s: (26.0...36.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (9.00)

#### Remarks:

: NAVISTAR #1820266C91  
Start-of-delivery blocking at start of  
delivery of cylinder no. 1.

#### Bow dimension:

Sliding-sleeve position = 37.0 mm  
Delivery-valve spring pre-tension =  
6.30...6.40 mm.  
Permissible alteration from 6.00...6.70  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : NAV  
 Edition : 16.08.93  
 Replaces : 04.93  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 946  
 Injection pump  
 Pump designation : PES6P120A320LS7284  
 EP type number : 0 412 726 891  
 Governor  
 Governor design. : RQV350...1100PA1066K  
 Governor no. : 0 421 815 349

Customer-spec. information  
 Customer : NAVISTAR

Engine : DTA-531

1st version kW : 222.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 076

Inlet press., bar : 2.80

Overflow  
 quantity min. 1/h: 170...190

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95  
 : (2.80...3.00)  
 Rack travel in mm : 10.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.80...13.90

Del. quantity cm<sup>3</sup>/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm<sup>3</sup> : 0.5

100 s: (1.2)

2nd speed rpm : 325.0

Rack travel in mm : 6.6...6.8

Del. quantity cm<sup>3</sup>/ : 2.8...3.4

100 s: (2.6...3.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.90...2.10

2nd speed rpm : 500  
 travel mm : 3.90...4.30

3rd speed rpm : 800  
 travel mm : 6.60...7.00

4th speed rpm : 1100  
 travel mm : 9.00...9.20

5th speed rpm : 1250  
 travel mm : 10.60...11.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100



Aneroid pressure h: 1500  
Del. quantity : 199.5...201.5  
1000 : (196.5...204.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 12.80  
Speed rpm : 1140...1170  
2nd rack travel in: 4.00  
Speed rpm : 1275...1285  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 15...23

#### Testing:

Speed rpm : 275  
Minimum rack travel: 7.50  
Speed rpm : 325  
Rack travel in mm : 6.60...6.80

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.80...13.90  
2nd speed rpm : 650  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 500  
Rack travel in m: 12.20...12.60  
4th speed rpm : 800  
Rack travel in m: 13.30...13.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1100  
Pressure hPa : 1500  
Rack travel mm : 13.80...13.90

#### Measurement

Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 9.70...10.10

2nd pressure hPa : 330  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 840  
Rack travel in m: 12.40...12.70

#### START CUT-OUT

Speed 1/min : 280 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1500  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 198.5...204.5  
1000 s: (195.5...207.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 91.5...95.5  
1000 s: (39.5...97.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 1140...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 125.0...165.0  
1000 s: (120.0...180.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.60...6.80  
Del. quantity cm<sup>3</sup>/ : 28.0...34.0  
1000 s: (26.0...36.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (9.00)

#### Remarks:

: NAVISTAR #1820267C91

Start-of-delivery blocking at start of  
delivery of cylinder no. 1.

#### Bow dimension:

Sliding-sleeve position = 37.0 mm  
Delivery-valve spring pre-tension =  
6.30...6.40 mm.

Permissible alteration from 6.00...6.70



## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : DEE 7,7 n  
Edition : 02.07.93  
Replaces : 06.93  
Test oil : ISO-4113

Combination no. : 0 402 776 808

Injection pump  
Pump designation : PES6P120A720RS7223  
EP type number : 0 412 726 843  
Governor  
Governor design. : RSV400...1050POA547  
Governor no. : 0 421 833 349

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6101 HZ010

1st version kW : 241.0  
Rated speed : 2100

### TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 2 417 413 075

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 140...150

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

### BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.70...12.80

Del. quantity cm<sup>3</sup>/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 6.0...6.2

Del. quantity cm<sup>3</sup>/ : 2.2...2.8

100 s: (2.0...3.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del. quantity : 212.5...214.5

1000 : (209.5...217.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

### RATED SPEED

1st version

Control lever  
position degrees: 42...50

Testing:

1st rack travel in: 11.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1155...1165  
3rd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 850  
Rack travel in m: 13.20...13.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.20...13.40

Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 290  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 620  
Rack travel in m: 12.50...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 850

Del.quantity cm<sup>3</sup>/ : 222.0...228.0  
1000 s: (219.0...231.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 137.5...141.5  
1000 s: (135.5...143.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...125.0  
1000 s: (80.0...130.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 22.5...28.5  
1000 s: (20.5...30.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Adjustment without torque-control E47014  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : DEE  
 Edition : 16.08.93  
 Replaces : 06.93  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 776 809  
  
 Injection pump  
 Pump designation : PES6P120A720RS7255  
 EP type number : 0 412 726 881  
 Governor  
 Governor design. : RSV475...1000POA551  
 Governor no. : 0 421 833 360

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6101 ATO10

1st version kW : 221.0  
 Rated speed : 2000

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 079

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 140...150

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

### BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del. quantity cm<sup>3</sup>/ : 21.8...22.0

100 s: (21.5...22.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 475.0

Rack travel in mm : 5.3...5.5

Del. quantity cm<sup>3</sup>/ : 2.2...2.8

100 s: (2.0...3.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

governor pressure h: 1200

Del. quantity : 218.0...220.0

1000 : (215.0...223.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

### RATED SPEED

1st version

Control lever  
position degrees: 41...49

Testing:

1st rack travel in: 11.30  
Speed rpm : 1050...1060  
2nd rack travel in: 4.00  
Speed rpm : 1120...1130  
3rd rack travel in: 4.00  
Speed rpm : 1125...1155  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 21...29

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 475  
Rack travel in mm : 4.80...5.00

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 460  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 735  
Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 136.0...140.0  
1000 s: (134.0...142.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 85.0...125.0  
1000 s: (80.0...130.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 475  
Rack travel in mm : 5.30...5.50  
Del.quantity cm3/ : 22.0...28.0  
1000 s: (20.0...30.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: JOHN DEERE # RE42303  
Start-of-delivery blocking 8,75° after  
start of delivery of cylinder no. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE  
 Edition : 02.07.93  
 Replaces : 06.93  
 Test oil : ISO-4113  
 Combination no. : 0 402 776 811  
 Injection pump  
 Pump designation : PES6P120A720RS7255  
 EP type number : 0 412 726 881  
 Governor  
 Governor design. : RSV400...1050PCA547  
 -2  
 Governor no. : 0 421 833 409

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6101 AFO10

1st version kW : 242.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 079

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 140...150

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 2.4...3.0

100 s: (2.2...3.2)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del. quantity : 225.5...227.5

1000 : (222.5...230.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 41...49

Testing:

1st rack travel in: 11.50  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1150...1160  
3rd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 12.50  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 750  
Rack travel in m: 12.90...13.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 12.90...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 620  
Rack travel in m: 10.50...10.60  
3rd pressure hPa : 1020  
Rack travel in m: 11.90...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 230.5...235.5  
1000 s: (227.5...239.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 124.0...128.0  
1000 s: (122.0...130.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...125.0  
1000 s: (80.0...130.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 24.5...30.5  
1000 s: (22.5...32.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: JOHN DEERE # RE46179  
Start-of-delivery blocking 8,75° after  
start of delivery of cylinder no. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
Edition : 02.07.93  
Replaces : 06.93  
Test oil : ISO-4113  
  
Combination no. : 0 402 776 812  
  
Injection pump  
Pump designation : PES6P120A720RS7255  
EP type number : 0 412 726 881  
Governor  
Governor design. : RSV400...1050PCA547  
-3  
Governor no. : 0 421 833 410

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6101 AF010

1st version kw : 225.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 079

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 140...150

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 2.6...3.2

100 s: (2.4...3.4)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del.quantity : 206.0...208.0

1000 : (203.0...211.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 44...52

Testing:

1st rack travel in: 10.70  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1165...1175  
3rd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.1

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 750  
Rack travel in m: 12.20...12.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 560  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 925  
Rack travel in m: 11.60...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 213.0...219.0  
1000 s: (210.0...222.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 125.0...129.0  
1000 s: (123.0...131.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...125.0  
1000 s: (80.0...130.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 26.5...32.5  
1000 s: (24.5...34.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: JOHN DEERE # RE42225  
Start-of-delivery blocking 8,75° after  
start of delivery of cylinder no. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : DEE  
 Edition : 02.07.93  
 Replaces : 06.93  
 Test oil : ISO-4113  
 Combination no. : 0 402 776 815  
 Injection pump  
 Pump designation : PES6P120A720RS7255  
 EP type number : 0 412 726 881  
 Governor  
 Governor design. : RSV400...900P7A569  
 Governor no. : 0 421 833 418

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6101 AFD10

1st version kW : 285.0  
 Rated speed : 1800

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 079

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 140...150

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 850

Rack travel in mm : 14.90...15.00

Del. quantity cm<sup>3</sup>/ : 30.9...31.1

100 s: (30.6...31.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 2.6...3.2

100 s: (2.4...3.4)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 850

Del. quantity : 309.5...311.5

1000 : (306.5...314.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

**RATED SPEED**

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 14.10  
Speed rpm : 895...905  
2nd rack travel in: 4.00  
Speed rpm : 950...960  
3rd rack travel in: 4.00  
Speed rpm : 965...995  
4th rack travel in: 1050  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 29...37  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.40...5.60

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 14.10  
Speed rpm : 895...905

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 85.0...125.0  
1000 s: (80.0...130.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 26.0...32.0  
1000 s: (24.0...34.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: JOHN DEERE # RE42226

Start-of-delivery blocking 8,75° after  
start of delivery of cylinder no. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
Edition : 02.07.93  
Replaces : 06.93  
Test oil : ISO-4113  
  
Combination no. : 0 402 776 816  
  
Injection pump  
Pump designation : PES6P120A720RS7255  
EP type number : 0 412 726 881  
Governor  
Governor design. : RSV400...1(150POA547  
-4  
Governor no. : 0 421 833 419

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6101 HF010

1st version kW : 280.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 079

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 140...150

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke nm : 3.55...3.65  
                  : (3.50...3.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.70...13.80

Del. quantity cm<sup>3</sup>/ : 26.1...26.3

100 s: (25.8...26.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del. quantity cm<sup>3</sup>/ : 2.9...3.5

100 s: (2.7...3.7)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del. quantity : 261.5...263.5

1000 : (258.5...266.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 40...48

Testing:

1st rack travel in: 12.70  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1155...1165  
3rd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 850  
Rack travel in m: 14.00...14.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 600  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 1060  
Rack travel in m: 12.70...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 850

Del.quantity cm<sup>3</sup>/ : 276.0...282.0  
1000 s: (273.0...285.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.5...136.5  
1000 s: (130.5...138.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.70  
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...125.0  
1000 s: (80.0...130.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 29.0...35.0  
1000 s: (27.0...37.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: JOHN DEERE # RE46178  
Start-of-delivery blocking 8,75° after  
start of delivery of cylinder no. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB  
 Edition : 15.09.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 244 031  
 Injection pump  
 Pump designation : PES4MW100/720RS1513  
 EP type number : 0 413 204 011  
 Governor  
 Governor design. : RQV300...1300MW125-3  
 Governor no. : 0 420 083 260

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM364LA

1st version kW : 104.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)

Rack travel in mm : 21.00

N20

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.60...12.70

Del. quantity cm<sup>3</sup>/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del. quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.15...1.65

2nd speed rpm : 413

travel mm : 2.25...2.75

3rd speed rpm : 880

travel mm : 4.75...5.25

4th speed rpm : 1354

travel mm : 8.43...8.93

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del. quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version  
Control lever  
position degrees: 110...118

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1420...1450  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 72...80

Testing:  
Speed rpm : 200  
Minimum rack travel: 6.00  
Speed rpm : 300  
Rack travel in mm : 4.20...4.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.90...9.00

Measurement  
Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 500  
Rack travel in m: 11.90...12.10  
3rd pressure hPa : 1000  
Rack travel in m: 12.60...12.70

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm3/ : 111.5...114.5  
1000 s: (109.0...117.0)  
Spread cm3 : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 43.0...45.0  
1000 s: (41.0...47.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 115.0...125.0  
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,0 t2  
 Edition : 08.09.93  
 Replaces : 06.84  
 Test oil : ISO-4113  
 Combination no. : 0 403 245 025  
 Injection pump  
 Pump designation : PESSM55/32ORS16-1  
 EP type number : 0 413 255 989  
 Governor  
 Governor design. : RW375/2200M28-3  
 Governor no. : 0 420 081 023

Customer-spec. information  
 Customer : MERCEDES BENZ

Engine : 617 A - USA

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 20...32

Prestroke mm : 2.10...2.20  
 : (2.05...2.25)

Rack travel in mm : 19.50...22.50  
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.5...13.6

Del. quantity cm<sup>3</sup>/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm<sup>3</sup> : 0.25

100 s: (0.30)

2nd speed rpm : 365

Rack travel in mm : 5.7...5.8

Del. quantity cm<sup>3</sup>/ : 1.0...1.1

100 s: (0.85...1.25)

Spread cm<sup>3</sup> : 0.5

100 s: (1.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1733

Del. quantity : 51.5...52.5

1000 : (50.5...53.5)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

SENSING-LEVER SETTING

Speed 1/min : 375

Contr.-rod trav. mm: -0.1

RATED SPEED

1st version

Control lever  
 position degrees: 69...

2nd rack travel in: 0..1

Speed rpm : 2950

3rd rack travel in: 12.1...12.3

Speed rpm : 2180

4th rack travel in: 2300...2320

Speed rpm : 11.2

5th rack travel in: 2620...2720

Speed rpm : 4.00

LOW IDLE 1

Control Lever  
position degrees: 27...31  
Setting point w/out bumper spring  
Speed rpm : 365  
Rack travel in mm : 5,7...5,8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 11.0  
Speed rpm : 320  
Maximum rack travel: 11.0

#### SET IDLE AUXILIARY SPRING

Speed rpm : -  
Rack travel in mm : 520...550  
: 1/MIN

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.5...13.6  
2nd speed rpm : 1600  
Rack travel in m: 13.1...13.3  
3rd speed rpm : 2180  
Rack travel in m: 12.1...12.3

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1400  
Rack travel mm : 0.40...0.70

#### Measurement:

Speed 1/min : 1000

1st pressure hPa : 1067  
Rack travel in m: 2.50...2.90  
2nd pressure hPa : 747  
Rack travel in m: 4.70...5.20

#### START CUT-OUT

Speed 1/min : 260...310

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1733  
Speed rpm : 1600  
Del.quantity cm<sup>3</sup>/ : 51.5...53.0  
1000 s: (50.5...54.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1733  
Speed rpm : 2180

Del.quantity cm<sup>3</sup>/ : 50.0...52.00  
1000 s: (49.0...53.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)  
Aneroid pressure h: 1067  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 41.0...43.0  
1000 s: (40.0...44.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 55.0...  
1000 s: (52.0...)  
Rack travel in mm : 20.50...21.50

#### HIGH IDLE

#### 1st version

Aneroid pressure h: 1733  
Speed rpm : 2550  
Del.quantity cm<sup>3</sup>/ : 24.0...30.0  
1000 s: (23.0...31.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (3.00)

#### LOW IDLE

Speed rpm : 365  
Rack travel in mm : 5.70...5.80  
Del.quantity cm<sup>3</sup>/ : 10.0...11.0  
1000 s: (8.50...12.5)  
Spread cm<sup>3</sup> : 0.50  
1000 s: (1.50)

#### Remarks:

:

#### SETTING THE IDLE STAGE

-Text supersedes the corresponding section in the test instructions.  
Control-lever position 69°.  
Drive pump at n = 1000 1/min. Screw in spring retainer until control-rod travel 13.5...13.6 mm is obtained.

#### Control-lever position 49°.

Drive pump at n = 1000 1/min.  
Control-rod travel 8.8...mm must be obtained.

Section 4.3 of test instructions changes as follows:

Drive injection pump at n = 800 1/min.

Set control lever so that control-rod travel 1.0...1.3 mm is obtained. Control lever must be within allowable tolerance. Bring idle stop up against control lever and fix.

#### SETTING THE IDLE-SPEED AUXILIARY SPRING

-Set idle-speed auxiliary spring to contact up to  $n = 520...550$  1/min.

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 =  $19.3^\circ...19.7^\circ$  ( $19.2...19.8^\circ$ ) angular displacement of cam following start of delivery of cylinder no. 1.

#### CHECKING OF SHUTOFF

-Drive pump at  $n = 200$  1/min.  
-Overcome spring-loaded idle stop with control lever. Control-rod travel obtained may be max. 5 mm.

#### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.  
With  $n = 375$  1/min. and  $p_u = 450$  mbar, control rod must move quickly to control-rod travel = 0 mm

Control-lever range idle to full load  $38...42^\circ$ .

#### Testing and adjusting the control-rod-travel sensor with evaluation circuit KDEP-P400

##### Receiving inspection

Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1733 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2,503...2,523 V must be displayed on the digital voltmeter.

##### RWG adjustment

At engine speed of 1000 1/min set delivery rate of 27.5...28.5 ccm/1000 strokes with control lever. Shift RWG until  $U = 1.755...1.775$  V is indicated. Tighten fastening screws to

1...2 Nm. Move control lever to full-load stop; voltage value of 2.503...2.523 V must be attained.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 7.5.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 446 149  
  
Injection pump  
Pump designation : PES6MM100/72ORS1114-  
1  
EP type number : 0 413 406 111  
Governor  
Governor design. : RQV300...1300MW55  
Governor no. : 0 420 083 076

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM366LA

1st version kW : 177.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 0008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 8.3...8.5

100 s: (8.1...8.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...7.9

Del. quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.9...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : ?

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del. quantity : 83.0...85.0

1000 : (81.0...87.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 10.40

Speed rpm : 1340...1350

2nd rack travel in: 4.00  
Speed rpm : 1430...1460  
4th rack travel in: 1520  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 78...86

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.70  
Speed rpm : 300  
Rack travel in mm : 7.80...7.90

#### TORQUE CONTROL

Dimension a mm : 1.00  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 750  
Rack travel in m: 12.40...12.50  
3rd speed rpm : 800  
Rack travel in m: 12.10...12.30  
4th speed rpm : 900  
Rack travel in m: 11.60...11.80

#### START CUT-OUT

Speed 1/min : 180 (200)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 84.0...86.0  
1000 s: (82.0...85.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 80.0...90.0  
1000 s: (77.0...93.0)

#### LOW IDLE

Speed rpm : 300

Rack travel in mm : 7.80...7.90  
Del.quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (9.0...15.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

Remarks:

: